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EDITORIAL

Welcome to volume 122 of the *Entomologist's Record and Journal of Variation* for which, I am sure most will have noticed, we have dropped the 'lurid lilac' cover. Hopefully, the new cover will meet with a greater level of approval! It is nearer to our traditional cover in terms of its colour; it is intended that each annual volume should bear a different insect and we would be interested to receive candidate images to use in future years.

During 2009, a total of 98 authors contributed 19 peer-reviewed papers and 85 Notes (reviewed in-house) to fill a total of 308 pages. We also reviewed 14 entomological books deemed likely to be of interest to subscribers and carried a number of 'Subscriber Notices'. We continue to publish the definitive annual reviews of immigrant Lepidoptera (volume 121 included the review of 2007) and of notable micro-Lepidoptera, with the two years of 2007 and 2008 in this volume.

The inclusion of 41 colour plates was evidently well-received by both authors and subscribers. Of course, from an editorial point of view these can cause me a headache. To keep costs (and hence subscriptions) to a minimum, all four pages of colour work need to be printed on the same side of a single sheet of paper, but because of the way these sheets are subsequently folded the colour pages occupy fixed page numbers. This is fine, until I get a paper that occupies more pages than the number available between colour plates – then I have to spend many happy hours jiggling things about to make them fit! This is usually the reason why some papers are held over in spite of me being short of copy. However, we are still extremely competitive in terms of the time lapse between receipt of a manuscript and its appearance in print, with most Notes appearing in the next issue following submission and Papers almost as fast, slowed only be the need for them to be sent to external referees and then, in some cases, back to authors for corrections.

Unfortunately, this rapid turnaround is partly a result of a desperate shortage of contributed articles and it is almost always a panic trying to fill 48 pages with material that subscribers will want to read. Those who have complained that there are not enough articles about moths are welcome to help rectify the imbalance – less than 10% of subscribers submitted any form of contribution during 2009. I cannot truly believe that the remaining 90 percent found nothing at all of any interest whatsoever during 2009. Ideally, contributions will be e-mailed to me, but this is not essential. Typed documents can be easily scanned into the computer here and if really necessary we can also accept clearly hand-written contributions. If you have never contributed before you are welcome to telephone me for a chat. Remember – it is the content of the Note that matters – leave the presentation to us. — COLIN W. PLANT

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Footman moths (Lep.:Arctiidae, Lithosiinae) in a Berkshire garden 2007 to 2009, with special reference to the Hoary Footman *Eilema caniola* (Hb.)

Experience during 2009 suggests that the Hoary Footman *Eilema caniola* has consolidated its colonisation of this part of Berkshire (Vice County 22).

My first encounter with this interesting species during 2009 was not in my garden, but some 5.5 kilometres to the south-east, in the grounds of the Royal Military Academy, Sandhurst, on 13 June. The Berkshire/Surrey county boundary runs through the Academy's grounds, the trapping site being just a few metres on the Berkshire side: the extreme southeast corner of Berkshire. Interestingly, the date was three weeks before the moth first appeared at home.

During the years 2007 and 2008, the numbers of Hoary Footman *Eilema caniola* seen in my garden were three and eight respectively (*Ent. Rec.* **121**: 296-297). During 2009, the total number of individuals seen here rose to a surprising 58, placing the species well ahead of Scarce Footman *E. complana* (L.). In addition, *E. caniola* appeared in my garden trap on more nights than any other

Table 1: Numbers of 'footman' individuals (number of nights recorded) for year 2007.

Month	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Total**
Number of trap nights	**22**	**17**	**26**	**23**	**20**	**19**	
Rosy Footman *M. miniata*	-	-	67 (18)	33 (12)	2 (2)	-	102 (32)
Four-dotted Footman *C. mesomella*	-	-	-	-	-	-	0 (0)
Orange Footman *E. sororcula*	52 (13)	10 (7)	-	-	-	-	62 (20)
Dingy Footman *E. griseola*	-	-	4 (4)	1(1)	-	-	5 (5)
Hoary Footman *E. caniola*	-	-	-	-	1(1)	2 (2)	3 (3)
Scarce Footman *E. complana*	-	-	47 (17)	11 (7)	-	-	58 (24)
Buff Footman *E. depressa*	-	-	6 (4)	1(1)	-	-	7 (5)
Common Footman *E. lurideola*	-	-	98 (20)	9 (5)	-	-	107 (25)

Table 2. Numbers of 'footman' individuals (number of nights recorded) for year 2008.

Month	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Total**
Number of trap nights	**18**	**15**	**25**	**25**	**12**	**14**	
Rosy Footman *M. miniata*	-	-	43 (11)	30 (10)	-	-	73 (21)
Four-dotted Footman *C. mesomella*	-	-	-	-	-	-	0 (0)
Orange Footman *E. sororcula*	8 (6)	3 (2)	-	-	-	-	11 (8)
Dingy Footman *E. griseola*	-	-	9 (4)	10 (5)	-	-	19 (9)
Hoary Footman *E.caniola*	-	-	3 (3)	3 (3)	-	2 (2)	8 (8)
Scarce Footman *E. complana*	-	-	22 (9)	13 (7)	-	-	35 (16)
Buff Footman *E. depressa*	-	-	11 (5)	3 (3)	-	-	14 (8)
Common Footman *E. lurideola*	-	-	76 (19)	8 (4)	-	-	84 (23)

'Footman' except Rosy *Miltochrista miniata* (Forst). My observations are summarized for the three years 2007 to 2009 in Tables 1-3.

Table 3. Numbers of 'footman' individuals (number of nights recorded) for year 2009.

Month	**April**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Total**
Number of trap nights	**26**	**24**	**23**	**27**	**29**	**21**	**29**	
Rosy Footman *M. miniata*	-	-	4 (3)	107 (26)	47 (17)	-	-	158 (46)
Four-dotted Footman *C. mesomella*	-	-	2 (2)	-	-	-	-	2 (2)
Orange Footman *E. sororcula*	1 (1)	21 (11)	-	-	-	-	-	22 (12)
Dingy Footman *E. griseola*	-	-	-	40 (15)	24 (12)	-	-	64 (27)
Hoary Footman *E. caniola*	-	-	-	35 (15)	16 (9)	1 (1)	6 (5)	58 (30)
Scarce Footman *E. complana*	-	-	-	32 (19)	3 (2)	-	-	35 (21)
Buff Footman *E. depressa*	-	-	1 (1)	20 (10)	2 (2)	-	-	23 (13)
Common Footman *E. lurideola*	-	-	2 (2)	262 (25)	2 (2)	-	-	266 (29)

Table 4.
Earliest and latest dates for 'footman' species for the years 2007 to 2009.

Species	**Earliest date**	**Latest date**
Rosy Footman *M. miniata*	25.vi.2009	9.ix.2007
Four-dotted Footman *C. mesomella*	22.vi.2009	27.vi.2009
Orange Footman *E. sororcula*	30.vi.2009	16.vi.2007
Dingy Footman *E. griseola*	10.vii.2009	14.viii.2009
Hoary Footman *E. caniola*	4.vii.2008 4.vii.2009	30.x.2009
Scarce Footman *E. complana*	5.vii.2009	1.viii.2007 11.viii.2009
Buff Footman *E. depressa*	27.vi.2009	8.viii.2008 8.viii.2009
Common Footman *E. lurideola*	25.vi.2009	7.viii.2007

As in the two earlier years, *E. caniola* continued later into 2009 than any other 'footman', the last record being just two days short of November; earliest and latest dates for each species in the garden are summarized in Table 4. — ROGER HAYWARD, The Comer House, Nine Mile Ride, Wokingham, Berkshire RG40 3DY.

Devon Carpet *Lampropteryx otriegata* (Metcalfe) (Lep.: Geometridae) in Suffolk – an update

The report of two specimens of Devon Carpet *Lampropteryx otriegata* taken at light at Dunwich Forest, Suffolk on 31 July 2009 was documented in this journal by Neil Sherman (2009. *Ent. Rec.* **120**: 305-306) as if referring to the first records for the county. An example of this species was in fact taken two years earlier at the same site on 4 August 2007 (Higgott, J., 2009. Devon Carpet *Lampropteryx otriegata* in Suffolk. *Atropos* **38**: 67). This latter note raised the suggestion of there being a local breeding population and the 2009 records would add weight to this possibility.

The Royal Society for the Protection of Birds (RSPB) is planning further entomological survey work in the Dingle Marshes area in 2010 when it is hoped that the status of the species at the site will become more clear. — Jeff B. Higgott, 42 Valleyview Drive, Rushmere St Andrew, Suffolk IP4 5UW.

Devon Carpet *Lampropteryx otregiata* (Metcalfe) (Lep.:Geometridae) in Warwickshire

I was interested to read in the last issue of this journal (*Ent. Rec.* **121**: 305-306), Neil Sherman's note reporting the first *Lampropteryx otregiata* in Suffolk at Dunwich Forest during 2009. The first record of this species in Warwickshire was made on 31 August 2007 in my garden MV trap at Charlecote, but the year 2009 provided further evidence of its extension in range, with two examples at MV light in Waverley Wood on 17 August (A. Prior). This wood is part of the Princethorpe woodland complex which contains a diversity of wooded habitats where it is hoped *otregiata* will also become established. — David C. G. Brown, Jackson's Lawn, Charlecote,Warwick CV35 9EW.

Devon Carpet *Lampropteryx otregiata* Metcalfe) (Lep.:Geometridae) – new for Buckinghamshire in 2009

The note from Neil Sherman concerning Devon Carpet in Suffolk (2009, *Ent. Rec.* **121**: 305-306) prompts me to mention that I managed to trap two examples in Buckinghamshire (VC24) during August 2009. I had been particularly on the lookout for this species after what I thought might be a potential specimen, retained from an MV Robinson trap run in Finemere Wood (O. S. grid reference SP 7221) on 30 May 2009, proved after dissection to be a smallish example of Water Carpet *Lampropteryx suffumata*. It was therefore very pleasing to find a much better candidate in an MV Skinner trap which I ran in the grounds of the Rothschild family home, Waddesdon Manor (SP 7216), on 13 August 2009. Although a little faded I felt it stood a greater chance of proving to be Devon Carpet, not only because of its size and markings but also due to the flight period (the literature states that Devon Carpet has a second brood whereas Water Carpet, the only species with which it could realistically be confused, does not). The moth was retained and passed on to Peter Hall for dissection and he confirmed that it was a male, the first record for VC24. Four evenings later, on 17 August, another potential Devon Carpet came to an MV Robinson trap that I ran in Shabbington Wood, Bernwood Forest (SP 6211). This specimen was also retained for dissection by Peter Hall and proved to be the second record for VC24, this time a female. — DAVE WILTON, 25 Burnham Road, Westcott, Aylesbury, Bucks HP18 0PL (E-mail: wilton@burnhamlodge.plus.com).

Moths new to the Isle of Wight in 2009

Bill Shepard found leaf-mines of *Mompha langiella* (Hb.) (Momphidae) on Enchanter's Nightshade *Circaea lutetiana* at Combley Great Wood on 16 August 2009. The mines were sent to Dr John Langmaid who later confirmed that they were this species, which is new to the Isle of Wight.

Dave Cooke took examples of *Agonopterix scopariella* (Heinemann) (Depressariidae) at light at Freshwater on 25 & 26 April then again on 26 July and in October. The identification of the species, which is new to the island, was confirmed by Mike Wall.

Tim Norris recorded at light an example of *Teleiopsis diffinis* (Haw.,) (Gelechiidae) at St. Catherine's Down on 19 September – another new vice-county record. James Halsey recorded a plume moth new to the Island in the form of *Cnaemidophorus rhododactyla* (D. & S.) at Bonchurch on 16 July 2009. The identity of the specimen was confirmed by Brian Elliott.

I took an example of *Catocala electa* (View.) (Noctuidae) at Totland on 21 August; this was the ninth British record and is new to the Isle of Wight. I also recorded *Scopula rubiginata* (Hufn.) (Geometridae) at Totland, on 4 August. This was probably a migrant and is also new to the Isle of Wight. — SAM KNILL-JONES, 1 Moorside, Moons Hill, Totland, Isle of Wight P039 OHU.

Hazards of butterfly collecting. *Oxylides faunus* and informal distance learning – Ghana, 2005

In 2005 I had the plum assignment of drawing up an inventory of the butterflies in all the National Parks of Ghana as well as some other areas of possible conservation interest. I had visited most of these on previous occasions since I began studies for my recent book (Larsen, 2005. *Butterflies of West Africa*. 2 vols, 596pp, 125 plates. Apollo Books). It was, however, incumbent on me to research those that I had not visited and double-check on those that I had. At last count about 800 of the 940 butterfly species known from Ghana are present in one or more of the National Parks and most of the rest are probably there as well (many species have been collected on just a few occasions, often before any National Parks had been established). My guess is that the National Parks will have 90-95% of all the known species though it will be some time before some of the rarest species will be recorded.

I was issued with an old, sturdy Toyota Landcruiser, driven by George Issaka one of the most knowledgeable and safest drivers of the Wildlife Division of the Ghana Forestry Department. He also had great people and diplomatic skills. I already knew George and we got on well together. During the first couple of days we packed up the car with camping paraphernalia, work table, butterfly equipment, batteries, and canned foodstuffs (sardines, cans of tomato paste, soup cubes, McVities digestive biscuits, basmati rice, and cheap Chinese noodle soups high on the packlist).

For six weeks we criss-crossed Ghana from north to south and east to west, seeing more of Ghana than 99% of all Ghanaians have ever done. George was an exception to this; I brought him only to three localities that he did not already know during our entire 6,000 km drive. No serious problem was encountered during the entire trip. The rear of the Landcruiser was loaded with so much stuff than we never fully unpacked the car, which gradually developed its own ecological system: our first resident pair of mice were grandparents by the time the trip was over.

One early evening we arrived at a National Park that I had not visited before. We went to see the Park Manager; he knew that we would be visiting and we had even been able advise him of the date by mobile phone – now covering much of Ghana and even some remote areas. 'I am very cross with you', he said ominously, much to my surprise. 'Ten years ago you promised to visit all National Parks within the next five years ... you never came!' He then grinned, and reminded me of a seminar back in 1995 where I had given a presentation on butterflies to all the senior wildlife staff; I did remember that rash promise from so long ago. He was not actually cross – George looked very relieved. The manager told us that one of his rangers knew a lot about butterflies and wanted to show us something very special; he would be our guide as we surveyed the park for the next three days.

Next morning the ranger arrived at our tent. He seemed a nice and enthusiastic young man; we had not met before: 'I want to show you a very special butterfly', he said, 'but we have to go to the forest'. We set off ... the forest is usually some kilometres from a Park HQ since there are no adequate roads or communication closer than that. As we chatted during the walk it was clear that the ranger had actually been looking quite closely at butterflies, but he did not want to volunteer what he planned to show us. As we entered the forest on a wide track, he shouted: 'There it is!' He pointed at a resting specimen of the hairstreak butterfly known as *Oxylides faunas* (Fig. 1). 'Look, Sir ... it has a head at the wrong end.' He disturbed the sitting butterfly. It flew five or six metres up the track, turning 180 degrees in mid-flight a fraction of a second before settling again on a flat leaf. He disturbed it once more, with the same result. He then gave me the whole story: the white hindwing underside had a set of several filamentous tails that looked very much like antennae, forming a 'false-head' looking much more like a head than the real head did. The false-head would fool predators such as mantids and jumping species into attacking the wrong end, aided by the way in which it twisted 180 degrees in the air just before landing so that the false-head pointed in the direction of flight.

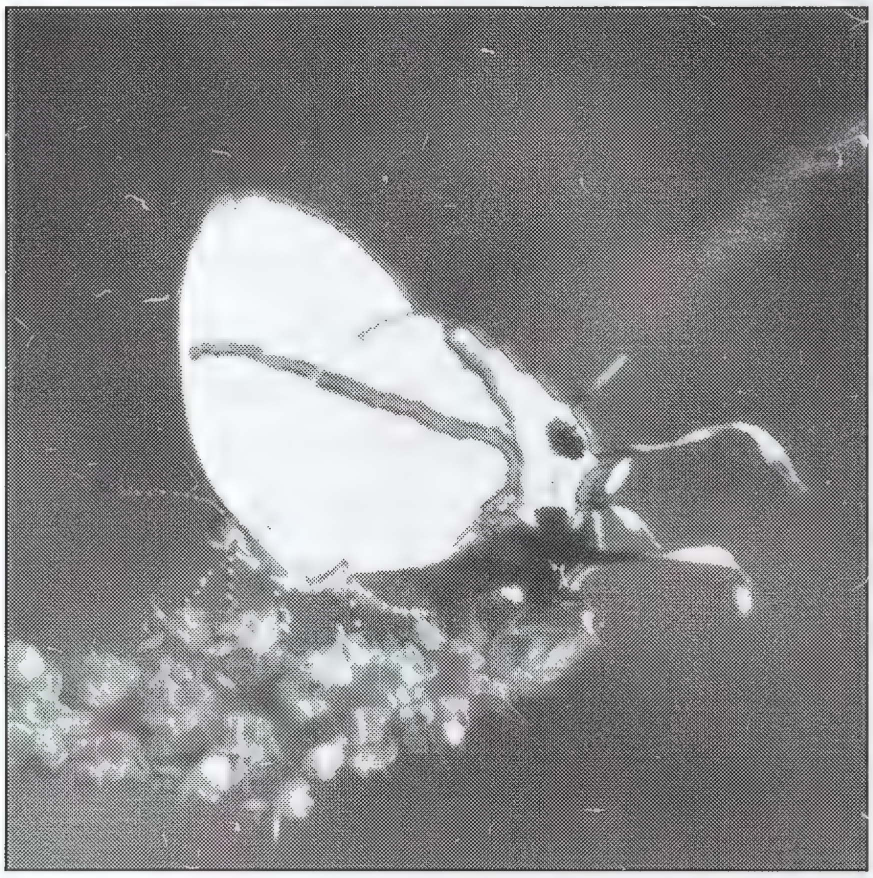

Figure 1.
Oxylides faunas – false head to the right.

One of my first papers on African butterflies had actually been on the exact subject about which I was now being so confidently instructed, based on observations that I made in Nigeria during December, 1980 (Larsen, 1982. False head butterflies; the case of *Oxylides faunas* Drury (Lycaenidae). *Journal of the Lepidopterists' Society*, **36**: 238-239). In this small study I observed 61 landings during a few hours on a business trip. In 83% of landings the butterfly twisted at least 90 degrees on landing, and of the total landings 62% were of almost 180 degrees (why two-thirds did a left twist, and only a third did a right twist I do not know – probably related to the topography of the landing zone). 'So when the spider attacks, it goes for the wrong end, and will not catch him'.

Had our ranger figured this out by himself? The answer was no ... a colleague, who worked in Kakum National Park, had showed it to him. And I remembered. In 1999 I had done a field-based seminar for rangers in Kakum. *Oxylides faunas* had been part of the curriculum and everybody had enjoyed it. Our ranger had received the information second-hand from someone I had taught six years earlier. He presented it beautifully, and does so to all visitors of the park: my pedagogical effort, once removed, was careful repeated six years later as distance learning. It also demonstrates how junior staff may genuinely be interested in knowing more also about creepy-crawlies and not just the 'charismatic' vertebrates, of which there are just few to be seen by the average visitor to Ghana's National Parks. You will, I hope, excuse my being rather pleased at that?— Torben B. Larsen, Jacobys alle 2, 1806 Frederiksberg C, Denmark (E-mail: torbenlarsen@btinternet.com).

PLUMBEOUS SPRUCE TORTRIX *CYMOLOMIA HARTIGIANA* (SAXESEN, 1840) (LEP: TORTRICIDAE) NEW TO THE BRITISH ISLES

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Abstract

The first occurrence of *Cymolomia hartigiana* (Saxesen, 1840) (Lep.: Tortricidae) in the British Isles is reported from Suffolk.

Keywords: Tortricidae, *Cymolomia hartigiana*, new to Britain, Suffolk, immigrant.

Introduction

On 17 July 2007, a male *Cymolomia hartigiana*, was captured in a Robinson-type trap with a 125W M.V. lamp at my coastal recording station on the Bawdsey Manor Estate, East Suffolk (O.S. grid reference TM 337379, Vice-county 25). The moth was retained and the specimen set as it was not immediately recognisable. Following a thorough search through Bradley, Tremewan & Smith (1979) and Razowski (2003), I failed to determine the identity of the moth. It was later passed on to JC for dissection and identified as a male *C. hartigiana* by reference to the genitalia illustration in Razowski (*op. cit.*).

Distribution and biology

C. hartigiana is illustrated in Razowski (*op. cit.*) from which the following data are taken. It is known to have a Palaearctic distribution including much of Northern and Central Europe with the exception of the south, China, the Russian Far East and Japan. The foodplants are European Silver Fir *Abies alba* and Spruce *Picea excelsa*. *Picea excelsa* is now considered conspecific with *P. abies* and is known widely as Norway Spruce. The larvae mine and later spin a bundle of needles together and feed within them, during the period August to May/June. The imago emerges during June to August.

In the eastern part of the range, in China, the foodplant has been documented as Manchurian Fir *Abies nephrolepis* (see *www.springerlink.com*) with the moth noted as being a serious pest of a variety of conifers in Japan (Momoi, 1966).

Description

Imago (Plate 1): Male. Wingspan 14mm. Antennae blackish brown, extending to middle of costa in forewing. Head brownish, covered with appressed scales; rather rough scales on collar, frons ochreous. Labial palps ochreous, slightly upturned. Thorax and abdomen blackish brown; legs blackish fuscous. Ground colour of forewing brownish, irregular fascia markings plumbeous with sub-basal markings most prominent. An obvious dark-brown elliptical tornal marking. Hindwing greyish-brown, cilia rather pale. The female is said to be similar.

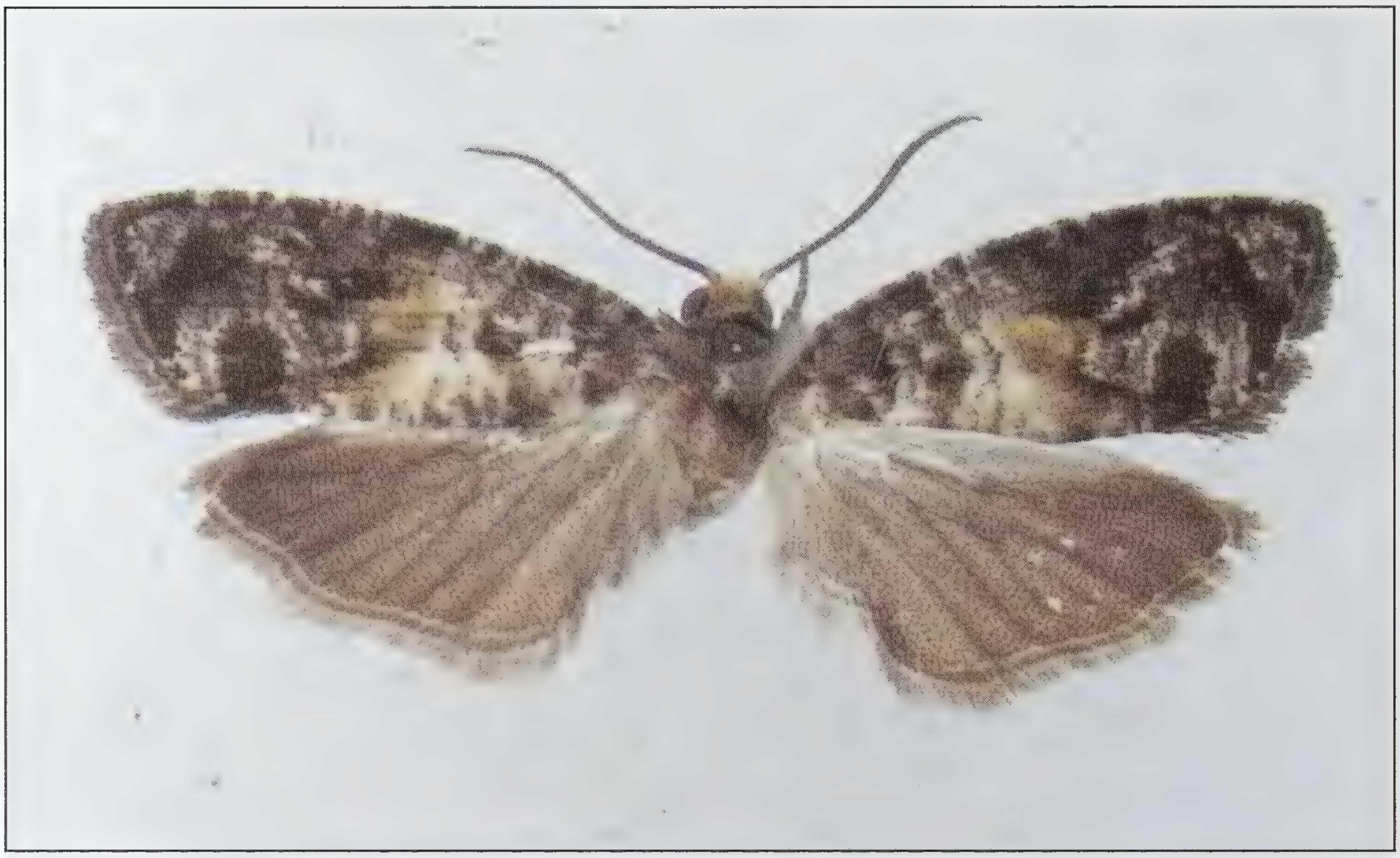

Plate 1: *Cymolomia hartigiana* (Saxesen, 1840), Bawdsey Manor Estate, Suffolk, 17 July 2007, leg. M. J. Deans. Adult male.

Male genitalia (Plate 2): The genitalia at first glance resembles *Zeiraphera* with long narrow upturned valva. On closer inspection, the aedeagus shows a row of small spines running along the dorsal edge ending with one longer, broader spine at the tip. The uncus is short and concave apically adorned with short, fine hairs. Female genitalia are illustrated in Razowski (2003) and reproduced here with kind permission of Dr Razowski.

Discussion

The capture of *C. hartigiana* on the East Anglian coast at a 'migrant hot-spot' suggests the likely origin as an immigrant from the near-continent. On the same night, one possible other migrant, a single specimen of Silver Y *Autographa gamma* (L.), was caught although the night was more memorable for the capture of a Large Emerald *Geometra papilionaria* – the first site record, after four years of sustained recording effort. Just 13 species of micro-lepidoptera were taken that night (including the *C. hartigiana* and the first site record of the gelechiid *Aproaerema anthyllidella* (Hb.)). Two specimens of the presumed recent colonist *Vitula biviella* (Zell.) (Pyralidae) were also taken; this first turned up at Bawdsey on 5 July 2007. Subsequently, another spruce-feeding moth has turned up at Bawdsey – *Assara terebrella* was trapped at light on 20 May 2009.

The foodplants of *C. hartigiana* have not been found at the capture site. The nearby Sandlings heathlands include the conifer forests of Rendlesham and Tunstall – a possible source for the moth. Likewise gardens in East Suffolk do host the occasional Spruce, but not in any abundance.

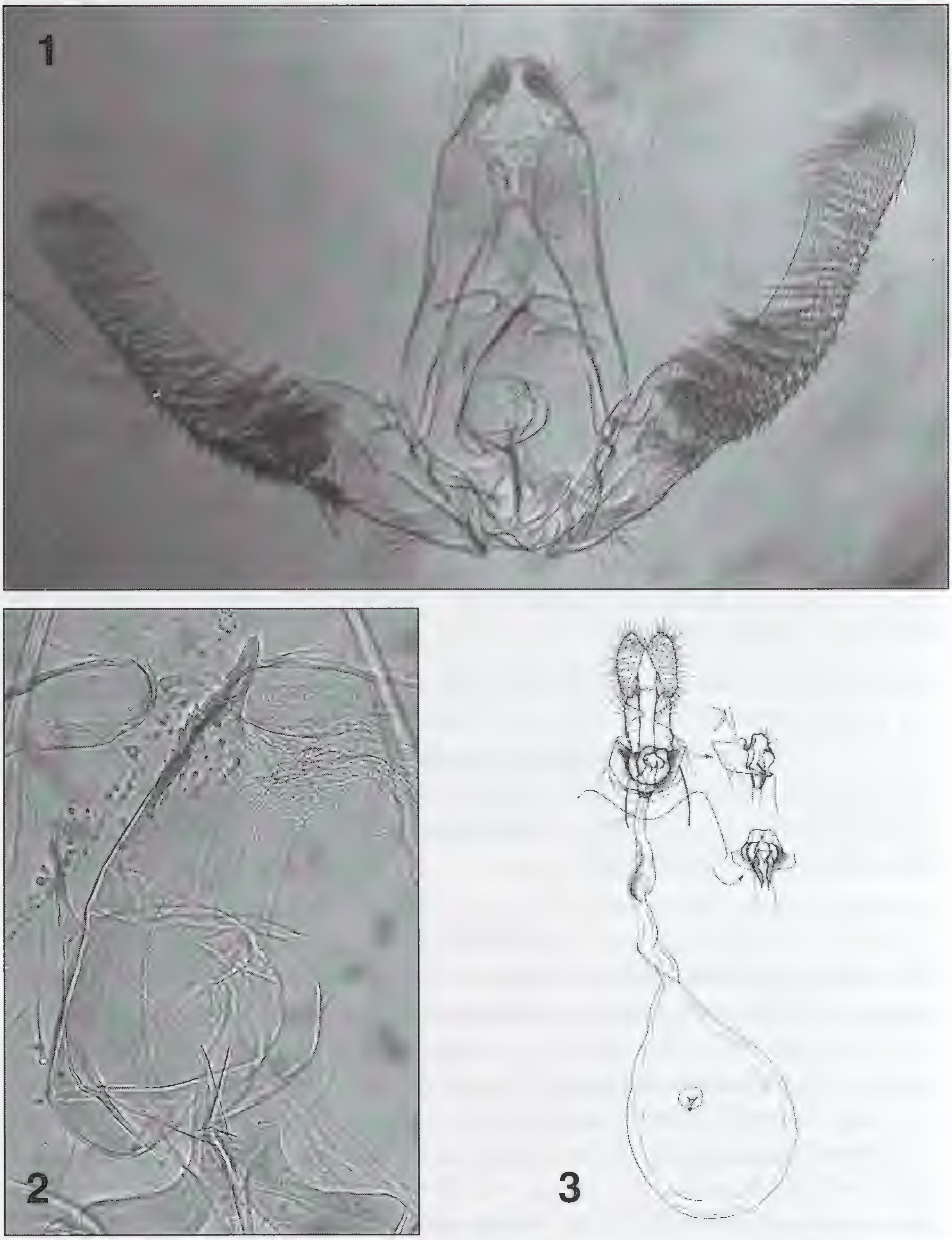

Plate 2. *Cymolomia hartigiana* (Saxesen). 1 – male genitalia & 2 – detail of aedeagus, both Bawdsey Manor Estate, Suffolk, 17 July 2007, leg. M. J. Deans. 3 – female genitalia, north-west Poland, reproduced, with permission, from Razowski (2003).

Cymolomia hartigiana is a serious pest of conifers in some countries, so much so that synthetic pheromone lures have been developed for its control in Europe. Its colonisation of Britain has been predicted for some time and we are likely to see further records.

As this is a new species to the British fauna, I propose the vernacular name of Plumbeous Spruce Tortrix. The species is not currently included in John Bradley's checklist (Bradley, 2000). Its taxonomic placing by Razowski (2003) within the Tribus Olethreutini is between the genera *Apotomis* and *Argyroploce*, the sequence of which is the reverse of that given in Bradley (*op. cit.*). It seems logical, therefore to place it after *Piniphila* and before *Pristerognatha* and so I suggest that it is allocated the Log Book number 1080a. The specimen has been lodged in the private collection of MJD and the genitalia slide is retained in the collection of JC under the reference 944.

Acknowledgements

We would like to thank Dr J. Razowski for his kind permission for me to copy his drawing of the female genitalia of *C. hartigiana.*

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Stegania cararia (Hb.) (Lep.: Geometridae) at Merriott, Somerset – the first record for mainland Britain

The Ringed Border *Stegania cararia* (Hb.) is a moth of the European mainland. It was recorded from Jersey in the Channel Islands during 1981 (Riley, 1987. *Ent. Rec.* **99**: 65-66) and has since been re-found on Jersey on three occasions, all summarized in Skinner (2009. *Colour Identification Guide to Moths of the British Isles*. Apollo). It is of great interest, therefore, to record now the first example for the British Isles, which was caught by Robin Clatworthy in a Robinson-pattern light trap at Manor Farmhouse Merriott, Somerset on 1 July 2009 (Plate 3). Robin has been trapping moths since 1952 and is a founder member of the Somerset Moth Group. Merriott is a small agricultural village, lying two miles north of Crewkerne, South Somerset, to the west of Yeovil. The small village is 13 miles from Charmouth, Lyme Bay, in a small valley surrounded by mixed farming typified with small fields. The trap is run regularly in a small, walled garden surrounded by the original farm complex all now turned into houses.

Riley (*op. cit.*) did not consider this species to be migratory in habit; neither his August 1981 record nor the present example coincide with any immigrant activity. With this in mind it is of interest that the recorded foodplant in Europe, *Populus* spp., is present in the vicinity of the Merriott site.

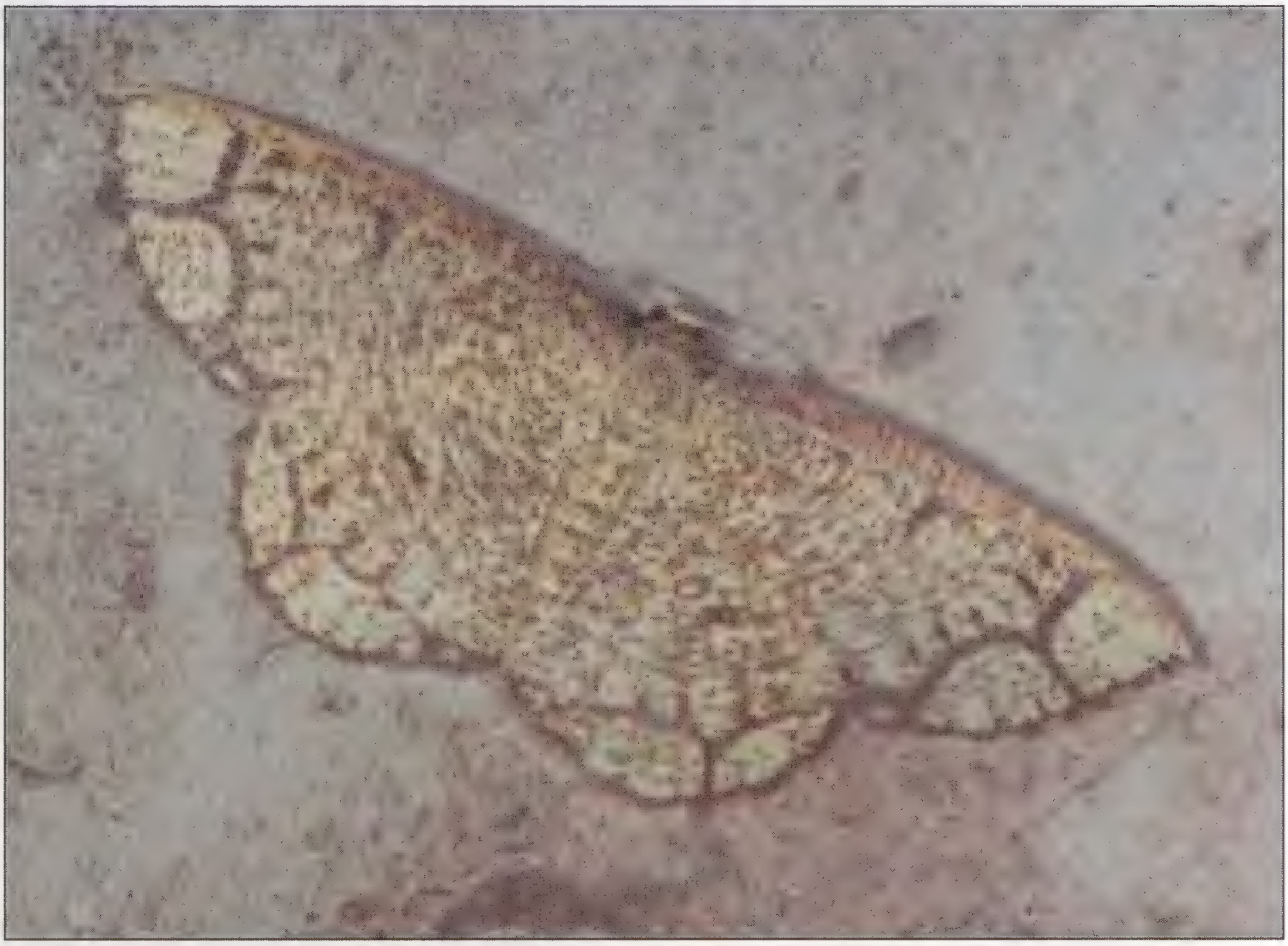

Plate 3. *Stegania cararia* (Hb.), Merriott, Somerset, 1.vii.2009. Leg. R. Claterworthy.

Riley also quotes Seitz (1912. *Macrolepidoptera of the World*. **4**: 36) and Forster and Wohlfahrt (1981. Die *Schmetterlinge Mitteleuropas* **5:** *Geometridae*: 202) in giving the distribution of the moth abroad as including south-east Europe and Asia. The same sources note that it is found up to an altitude of 600 metres, inhabiting damp areas adjacent to rivers and streams and give the adult flight period as early June to mid-August (early April to August in the extreme south-east), in two over lapping generations. Koch (1976. *Wir Bestimmen Schmetterlinge*. *4*: *Geometridae*: 192-193) states that it can be found flying along avenues of Poplars

The egg is reportedly reddish brown and oval and the larva is described as ventrally light green, dorsally light yellowish green with darker dorsal chevrons, a dark violet dorsal stripe and a dark brown head. It feeds from July to September on poplar (Forster and Wohlfahrt, *op. cit.*) and possibly on oak and lime (Koch, *op. cit.*). It pupates either in a loose cocoon on the ground or rolled or in a folded leaf and overwinters in this stage. The pupa is short and thick, dorsally reddish brown, paler ventrally, with green wing cases.

My thanks to Robin Clatworthy for allowing me to publish this Note on his behalf and also for his enthusiasm, friendship and help in my role as the former Somerset Moth Recorder. I also thank Adrian Riley for his report and help in the past. — David Evans, 8 Culford Close, Bournemouth BH8 0HX.

THE CHANGING MOTH AND BUTTERFLY FAUNA OF BRITAIN – THE FIRST DECADE OF THE TWENTY-FIRST CENTURY (2000-2009)

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Abstract

Broad changes to the British Lepidoptera fauna are summarised, covering those species that have recently colonised the country and those species that may have become extinct. These broad changes are briefly compared with those of the previous century.

Keywords: Lepidoptera, colonisation, extinction, immigration, accidental introduction, non-native plants, climate.

Introduction

Parsons (2003) attempted to identify the species of Lepidoptera that had colonised Britain, excluding Ireland and the Channel Islands, and those that had become extinct (or possibly extinct) during the Twentieth century. The exercise entailed some degree of interpretation especially where details were sketchy, e.g. some of the microlepidoptera. Sixty-six extinctions or probable extinctions were listed, compared to 89 species thought to have become established in the country during the century (although there were approximately 540 additions to the British list over the same period). Overlooked residents, including additions through taxonomic revisions, were not covered by that review.

By comparison Leverton (2001), in an appendix, covered the presumed gains and losses of resident British microlepidoptera since records began, giving 30 species as having become extinct, with 58 becoming established, Parsons (*op. cit.*) listing 34 and 66 respectively. To the latter of Leverton's figures can be added 30 species of larger moth highlighted by Leverton as gains, giving a similar total of 88 species to the 89 given in Parsons (2003), although there are many differences in the species listed. However, as Leverton points out 'any such list is subjective and debatable'. He also added of the apparent losses that 'microlepidoptera are easily overlooked, and it is possible that some of these species may be refound'. Of those listed in Parsons (*op. cit.*), only *Lyonetia prunifoliella* (Hb.) has been refound, for example in Somerset and Dorset in 2007 (Langmaid & Young, 2009), although these examples may well have been primary immigrants, so this species could still be classed as an extinct resident.

Amongst the macrolepidoptera listed as becoming extinct or possibly extinct in Parsons (2003), the Gypsy Moth *Lymantria dispar* (L.) is currently resident, originating as an accidental import. The Small Ranunculus *Hecatera dysodea* (D.& S.) has firmly re-established itself, almost certainly through natural colonisation, as has Blair's Wainscot *Sedina buettneri* (Hering), although these latter two were also listed in Parsons (*op. cit.*) as species that had become established in the late 1990s. Amongst the butterflies, the Large Blue *Maculinea arion* (L.) is a conservation success story having been re-introduced in 1984, and is now re-established on over 30 sites.

The decade 2000 to 2009

From reports in the various entomological journals there appears to have been a regular procession of additions to the British list in the last decade (2000-2009). At least 75 species have been recorded new to Britain during the decade in question, and this figure may well be added to. However, not all of these have been formally added to the British list as there is inconsistency in the way adventive species are treated, some being given a so-called 'Bradley' number (see Bradley, 2000), whilst others are not (see also Classey, 2002). This total also includes a few species of overlooked long-term residents, for example species have been added through taxonomic considerations, e.g. *Acleris effractana* (Hb.) (Karsholt *et al*, 2005), whilst others may genuinely have been overlooked, for example *Emmelina argoteles* (Meyrick) (Higgott, 2006).

Table 1 lists 14 species thought to have colonised the country (excluding Ireland and the Channel Islands) during 2000 to 2009 and for which there is no previous record prior to this decade. Of these, seven are thought to have become established naturally or probably naturally, as a result of primary immigration, whilst seven are considered to be non-native adventives, accidentally introduced. It is possible that a few additional species could be added to this total, although it is too early to determine if they have become established in the longer term. An example is the Boxworm Moth *Diaphania perspectalis* (Walker) which was first found in Surrey in 2008 (Mitchell, 2009), with larvae and pupae being found in Surrey in 2009, the moth also being recorded in East Sussex in 2008 and in Kent in 2009 (Clancy, pers. comm.). *Blastobasis vittata* (Wollaston) and *Opogona omoscopa* (Meyrick) may also now be resident, with recent records of the former in Sussex and Hampshire, although too few examples have been recorded to make an assessment at this stage. The first *O. omoscopa* caught in the wild in this country was found in 2006 (Money, 2009), but in the autumn of 2009 over 80 were seen on the Isles of Scilly (P. Clark, pers. comm.), which is strongly indicative of a resident population.

Additionally, there are a few species which either probably colonised the country in late 1999 and were not covered in the previous summary or were added to the British list during the period 2000 to 2009, but subsequent data and re-identification has shown these to have been first recorded prior to 2000 (see Table 3).

Other species have also become established in this country, but these have occurred previously, either as regular or infrequent immigrants, as accidental importations or former temporary colonists. Table 2 is an attempt at listing those species in this category which are thought to have become resident during the 2000 to 2009 period and, in a few cases prior to that period, e.g. the White-point *Mythimna albipuncta* (D.& S.) which was overlooked in the earlier review (Parsons, 2003). In some cases it is extremely difficult to make a judgement about precisely when a species became established, for example the Red Admiral *Vanessa atalanta* (L.) may have become a resident in the 1990s, although this assessment records it as the early 2000s on a consideration of the records. Also, for a few of the species listed in Tables 1 to 3, it may be a matter of opinion whether or not they are resident (or even temporarily resident), as for many the larval stage has not been found in the wild, with the frequency of records implying residence.

However, even finding the larval stage does not necessarily confirm longer term residence, for example the Humming-bird Hawk-moth *Macroglossum stellatarum* (L.) has not been included, despite many larvae and overwintering adults being found, as there is still not enough evidence to confirm this as a longer term resident. There has also been debate as to whether or not the Clouded Yellow *Colias croceus* (Geoffroy) has become established, although it has overwintered several winters since the late 1990s. Skelton (2004) suggested that it was not possible to speak of a permanent colony. Porter's Rustic *Proxenus hospes* (Freyer) is also not included in this table, although Skinner (2009) tentatively suggests that it might be breeding in parts of southern England, but equally the upsurge in records could equate to a range spread on the Continent. It may, however, be just a matter of time before this species becomes established. Additionally, species such as the Olive Crescent *Trisateles emortualis* (D.& S.) are not included here. Whilst this moth has evidently colonised parts of Sussex and Kent in recent years, probably as an immigrant from the Continent, it has also been known since the 1970s from a small area of Essex, where it is still resident, and before that from the Chilterns, where there have been no recent records.

During the decade 2000 to 2009 it is considered that 24 species have become resident; 15 species are thought to have established naturally, i.e. through primary immigration, whereas nine are the result of probable accidental importations (see Tables 1 & 3). Again some assumptions need to be made as it is not always obvious if a species has arrived naturally or is an adventive, e.g. the Pine-tree Lappet *Dendrolimus pini* (L.) could be a long term overlooked resident (Leverton, 2009), but for this study has been classed a possible adventive. Of the 24 species, 14 are associated with native plants, seven with non-native plants (with Scots pine treated as a non-native as it is widely planted as a crop tree), the foodstuff is unknown for one, whereas two are associated with dead or decaying wood or lichen.

Against these significant numbers of newly established species there are, unfortunately, a few that are likely to have become extinct in recent years. This, however, also requires considerable speculation. It is extremely difficult to

Table 1. Adventive or immigrant Lepidoptera species with no previous British record that have become established in the wild in Britain between 2000 and 2009.

This table does not include the Channel Islands or Ireland nor British species that are considered to be overlooked but longer term residents.

Species	**Bradley Number (Bradley, 2000)**	**Year of first record**	**Site first recorded (Vice-county number)**	**Foodplant(s)***	**Origin: Immigrant (I)/ Adventive (A)**	**Reference**
Ectoedemia hannoverella (Glitz)	24a	2002	Mildenhall (26)	Black Poplar *Populus nigra* and hybrids *P.* X *canadensis*	A?	Prichard & Clifton (2004)
Bucculatrix ulmifoliae M. Hering	274a	2006	Farnham Park (17)	Hybrid elm *Ulmus pumila* X *U. japonica*	A	Langmaid, Porter & Collins (2007)
Horse Chestnut Leaf Miner *Cameraria ohridella* Deschka & Dimic	366a	2002	Wimbledon (17)	Horse Chestnut *Aesculus hippocastanum*	A	Tyler-Smith (2003)
Phyllocnistis ramulicola Langmaid & Corley	367a	2006	Havant Thicket (11)	Grey Willow *Salix cinerea*, also Goat Willow *Salix caprea*	I	Langmaid & Corley (2007)
Raspberry Clearwing *Pennisetia hylaeiformis* (Laspeyres)	369a	2007	Meldreth (29)	Raspberry *Rubus idaeus*	A	Reid (2008)
Prays peregrina Agassiz	449b	2003	Parliament Hill (21)	Unknown	A	Agassiz (2007)
Coleophora calycotomella Amsel	521a	2004	South-west Surrey (17)	Broom *Sarothamnus scoparius*	I?	In prep.
Metalampra italica Baldizzone	642a	2003	Plympton (3)	Probably under the bark of dead, deciduous trees	A?	In prep.
Cosmopterix pulchrimella Chambers	896b	2002	Walditch (9)	Pellitory-of-the-wall *Parietaria officinalis*	I	Parsons (2002)
Jersey Mocha *Cyclophora ruficiliaria* (H. – S.)	1678a	2003	Portland (9)	Oak *Quercus* spp.	I	Chainey & Spence (2004)
Common Forest Looper *Pseudocoremia suavis* (Butler)	1965a	2007	Greatwork (1)	A variety of trees and shrubs including Southern Beech *Notofagus* spp., Yew *Podocarpus* spp., Douglas Fir *Pinus radiata* & North Island Douglas-fir *Pseudotsuga menziesii*	A	James (2008)
Langmaid's Yellow Underwing *Noctua janthina* (D.& S.)	2110a	2001	Southsea (11)	Polyphagous on herbaceous shrubs and low plants	I	Langmaid (2002)
Sombre Brocade *Dryobotodes tenebrosa* (Esper)	2248b	2008	Durlston (9)	Holm Oak *Quercus ilex*	I	Davey (2009)
Clancy's Rustic *Platyperigea kadenii* (Freyer)	2387a	2002	New Romney (15)	A variety of low-growing plants	I	Clancy & Honey (2003)

* Includes *probable* foodplant(s) if the early stages have not been found in the wild in this country.

Table 2. Adventive or immigrant Lepidoptera species with previous British records that have become established (re-established) in the wild in Britain from 2000 to 2009 (or prior to that date where recent data has become available).

Note: Does not consider species in the Channel Islands or Ireland, or cover species that are considered to be overlooked, but long term residents. Excludes Large Blue *Maculinea arion*.

Species	**Bradley Number (Bradley, 2000)**	**Probable year of first record as a resident (based on available records)**	**Region where established**	**Foodplant(s)***	**Origin: Immigrant (I)/ Adventive (A)**	**Reference**
Red Admiral *Vanessa atalanta* (L.)	1590	Early 2000s**	Southern England	Common Nettle *Urtica dioica*, Small Nettle *U. urens* & Pellitory-of-the-wall *Parietaria judaica*	I	Fox & Dennis (in prep.)
Pine-tree Lappet *Dendrolimus pini* (L.)	1639	2004	Inverness area	Scots Pine *Pinus sylvestris*	A?	Kiddie (2007)
Blair's Mocha *Cyclophora puppillaria* (Hb.)	1678	c.2004	Sussex, Isle of Wight	Holm Oak *Quercus ilex*, *Cistus*, *Myrtus* & *Arbutus* spp.	I	-
Dusky Peacock *Macaria signaria* (Hb.)	1891	2004	Kent	Scots Pine *Pinus sylvestris*, Western Hemlock *Tsuga heterophylla* and possibly other conifers	I	Clancy (2005)
Bedstraw Hawk-moth *Hyles gallii* (Rottemburg)	1987	?1987	East Anglia	Bedstraw *Galium* spp. & Willowherb *Epilobium* spp.	I	Parsons, Sheppard & Tunmore (2004)
Oak Processionary *Thaumetopoea processionea* (L.)	2022	2006	South-west London	Oak *Quercus* spp.	A	Plant (2006)
Gypsy Moth *Lymantria dispar* (L.)	2034	c.1995	Buckinghamshire, Hampshire, London	Oak *Quercus* spp. and possibly other trees and shrubs	A	-
White-point *Mythimna albipuncta* (D.& S.)	2194	?c.mid 1980s	Southern England	Various grasses	I	-
White-speck *Mythimna unipuncta* (Haw.)	2203	?early 2000s	Isles of Scilly	Grasses	I	-
Tree-lichen Beauty *Cryphia algae* (Fabr.)	2292	c.2000	South-east England	Lichens	I	West (2004)
Dewick's Plusia *Macdunnoughia confusa* (Stephens)	2436	c.2005	South-east England	Includes Common Nettle *Urtica dioica*, Yarrow *Achillea millefolium* and Bladder Campion *Silene vulgaris*	I	-
Clifden Nonpareil *Catocala fraxini* (L.)	2451	c.2005	Sussex, Hampshire & Dorset	Aspen *Populus tremula*, possibly other poplars *Populus* spp.	I	-
Plumed Fan-foot *Pechipogo plumigeralis* (Hb.)	2488a	c.2000	Very local in parts of south-east England, particularly Sussex	Probably associated with withering leaves	I	Skinner (2009)

* Includes *probable* foodplant(s) if the early stages have not been found in the wild in this country. ** Possibly became established during the 1990s, although this is difficult to determine with certainty.

Table 3. Adventive or immigrant Lepidoptera species that were first reported during the period 2000 to 2009, but where additional information has shown these probably became established in the wild prior to that date.

Species	Bradley Number (Bradley, 2000)	Probable year of first record as a resident	Site first recorded (Vice-county number)	Foodplant(s)	Origin: Immigrant (I)/ Adventive (A)	Reference
Ectoedemia heringella (Mariani)	36a	1996	South Kensington (21)	Holm Oak *Quercus ilex*	A?	In prep.
Blastobasis rebeli Karsholt & Sinev	875a	1998	nr. Bishop's Waltham (11)	Unknown	I?	Dickson (2004)
Oak Rustic *Dryobota labecula* (Esper)	2246a	1999	Freshwater (10)	Holm Oak *Quercus ilex*	I	Rogers (2000)

Table 4. Lepidoptera species considered to have become extinct (or with no recent record) between 2000 and 2009, or not covered by Parsons (2003).

Species	Bradley Number (Bradley, 2000)	Year of last record	Where last recorded	Foodplant(s)***	Reference
Bordered Gothic *Heliophobus reticulata* (Goeze) (ssp. *marginosa* Haworth)	2153	2001*	Gravesend (16)	Sea Campion *Silene maritima* and possibly other *Silene* and *Dianthus* spp.	Agassiz (2002)
Orange Upperwing *Jodia croceago* (Denis & Schiffermüller)	2257	1994**	Cardiganshire	Oak *Quercus* spp.	Spalding (2001)
Brighton Wainscot *Oria musculosa* (Hübner)	2378	2001	Tilshead (8)	Wild grasses and cereals	Phillips & Parsons (2005)

*Also recorded in 2003 and 2005 as singletons in Norfolk and Dorset respectively, but considered to be immigrants.

** Also reported in 1999 (one dead in a spider's web) and in 2006 (a possible immigrant) in Devon and Sussex respectively.

*** Includes *probable* foodplant(s) if the early stages have not been found in the wild in this country.

identify when or if a species has become extinct in the recent past - does another year or two without a record mean that a species has gone from these shores? This assessment considers there is a probability that two species have become extinct during the last decade with an additional species probably being lost during the 1990s (see Table 4). With time it may become clear that others should be added to this list, for example Leverton (2008) highlights the recent records of the Stout Dart *Spaelotis ravida* (D.& S.), with only a single moth found during the decade, that in Norfolk in 2007. This is a species that is known to have cyclical periods of relative abundance, although it is clearly currently at a very low ebb indeed.

Table 5. Summary of Lepidoptera colonisers from 1990 to 2009. Figures in parentheses represent the number of colonising species that have subsequently become extinct.

Date class	Total no. of new colonisers	Thirty year combined total
1900-1909	3	-
1910-1919	2	-
1920-1929	6	11
1930-1939	10	18
1940-1949	11	27
1950-1959	14	35
1960-1969	7	32
1970-1979	14 (-1)	35 (-1)
1980-1989	10 (-2)	31 (-3)
1990-1999	18	42 (-3)
2000-2009	24*	52 (-2)*
Total	119 (-3)	

* Total includes Red Admiral which is considered to have become established in the early 2000s, but may have become established during the 1990s.

How do these changes compare to previous decades?

Parsons (2003) reported that for each decade from 1970 until 1999 14, eight and 14 species had become established respectively, although one from 1970-79 and two from 1980-89 became extinct subsequently. To these figures can be added two for the period 1980-1989, i.e. a total of ten, and four for the period 1990-1999, i.e. a total of 18. Twenty-four newly resident species for the period 2000-2009 is seemingly a significant jump on the previous decade, itself the highest total for an individual decade in the Twentieth Century. The combined thirty year totals show a steady increase in numbers over the decades, with the largest combined totals being for the two decades from 1990 onwards. Table 5 gives a revised summary of the total number of colonisers for each decade from 1900 to 2009 and updates Table 2 in Parsons (2003).

What are the underlying causes behind this increasing rate of colonisation?

The increasing rate of colonisation appears to be driven by four main factors:

1. The majority of the newly colonised species for the decade in question are thought to have become established through primary immigration, including a few associated with non-native plants. This would indicate that climatic factors are playing a significant part in this increasing rate of colonisation.
2. The wide scale planting of some non-native plants creates potential habitat for new colonisers, either arriving naturally or accidentally, for example through international trade in plants. Some species will have spread taking advantage of this, some being slower colonisers than others.

3. The influence of accidental introduction and subsequent establishment also appears to be on the rise. Over the last three decades as a percentage of the total figures covering the moths for each decade, the adventives have made up 20%, *c.*28% and *c.*39% of the total respectively. The influence of non-native plants, plant trade, climate change and habitat change are discussed further in Parsons (2003).
4. Moth-recording is undoubtedly on the increase and this would lead to a quicker detection rate for new arrivals, although it is reasonable to assume these new establishments would also be detected in due course with lower levels of recording.

Conclusions

Twenty-four species have become established in Britain during 2000 to 2009, whilst three more could be added to the total of 66 probable extinctions since the beginning of the Twentieth century. Both these totals may be under-estimates, whilst it is also acknowledged that some of those species listed as becoming established may only be temporary establishments. The increasing colonisation rate, particularly noticeable in the last two decades, is likely to be driven by a combination of factors, including the wide-scale planting of non-native plants and the trade in plants from abroad. As many of the recent colonists have arrived naturally, through immigration, climatic factors are also strongly suspected of having a major influence in this process. If this is to continue, we can anticipate many more new arrivals in the forthcoming decades, some of which may be less welcome in some quarters than others.

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Two species of hornbeam-feeding microlepidoptera new to Berkshire

On 21 September 2008, while walking along the banks of the River Lodden at Lower Earley, I found two sets of *Parornix* larval feeding folds, with their associated mines, on some Hornbeam *Carpinus betulus* trees. These contained one larva of *Parornix carpinella* (Frey). This had cocooned by 5 October and is now over-wintering in my garden. Prompted by this discovery I searched some hornbeam trees at Jealott's Hill near Bracknell, Berkshire on 26 September and at Dinton Pastures on 27 September 2008. At both sites I found larval folds and mines of *P. carpinella* (six sets at Jealott's Hill and four sets at Dinton Pastures). Closer examination revealed that the Jealott's Hill folds concealed two larvae (one cocooned by 6 October, the other was parasitised), while those from Dinton Pastures contained one larva which had cocooned by 14 October 2008. After over-wintering in my shed adults duly emerged on 2 March 2009 (Jealott's Hill larva), 5 March 2009 (Dinton Pastures larva) and 7 March 2009 (Lower Earley larva).

Finding larvae on this food plant reminded me that I had reared *Stigmella carpinella* (Hein.) from Hornbeam at Bear Wood near Wokingham, Berkshire and from Old Pond Cops in Reading. The former was found mining foliage on 25 June 2000 and hatched on 12 July 2000, while the latter was found 28 September 1998 and hatched on 8 April 1999, having been over-wintered in the garden. I searched both these sites for *P. carpinella* during the first week of October 2008, but failed to find any evidence of it.

According to Martin Harvey, the microlepidoptera recorder for Berkshire having been over-wintered in the garden,, both *P. carpinella* and *S. carpinella* represent new records for vice-county 22.— I. Sims, 2 The Delph, Lower Earley, Reading, Berkshire RG6 3AN.

BUTTERFLY DIVERSITY FROM A SEQUENTIAL SURVEY

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Abstract

A method is described for using sequential observations to estimate diversity in butterfly communities. Results from a survey in Amazonian rainforest show that it may have potential as a quick way of evaluating habitat quality.

Keywords: Butterflies, habitat evaluation, diversity estimation, Amazonia.

Introduction

Faunal and floral diversity are desirable features of natural habitats, and as we enter a Biodiversity Year (*http://www.cbd.int/2010/*) it is worth considering how they can be assessed. Good habitats are diverse ones, but diversity is difficult to measure. The first consideration is species richness (Gaston, 1996), which is simply the number of species in the community of a given area. To estimate it we need to recognize and distinguish all the species. Another feature of diversity is relative abundance. A community in which all species are approximately equal in frequency is more diverse than one with the same richness but a single predominant species and the rest very rare. The two most commonly used measures of diversity in this sense are the Shannon Index and Simpson's Index (Magurran, 1988). Simpson's Index is based on the sum of the squares of the relative frequencies of each of the species present (Simpson, 1949). It can be quoted as it is, in which case the smaller the value the higher the diversity, or inverted, so that the values increase with diversity. Collecting data of this type is laborious and time consuming, not to say destructive of the fauna (e.g. see Cook & Graham, 1996; Mendes *et al.*, 2008; de Vries *et al.*, 2009). The problems were highlighted for us on a university field course in Amazonian rain forest, where we wished to measure butterfly diversity although time was limited, species number high, taxonomy unknown and collection was not permitted. In this paper we employ a practical, even if partial, solution.

Diversity indexes estimate whether different individuals share a common group. For Simpson's Index the summation referred to above estimates the probability that two individuals in a sample of two belong to the same species. For butterflies encountered on walks, and perhaps for some other insect groups, this can be estimated directly by observing sequences of overlapping pairs of sightings, thus bypassing the need to estimate relative abundance (Cook, 2008). The task is reduced to deciding whether or not the two successive individuals belong to the same species, a simpler process than identifying the species.

Location and methods

The study area is in rain forest in Orellana Province, Ecuador, on the Payamino river. Four transects roughly 500m long in mature secondary forest were examined in 2009. Nearby was a cleared area around the research base, connected to an extensive garden and a series of paths, which was more heavily disturbed. On the opposite (left or east) bank of the river is forest liable to flooding and therefore relatively undisturbed. Both these areas were examined in 2007 (Cook, 2008), so that comparisons with them could also be made. The four transects were cut as part of a separate project to assess correlation of biodiversity measures between different groups of organisms.

Surveys by the two observers were made by walking the transects out of sight of each other for 1-1½ hr and making independent records. Each individual recognized as a new species was noted, to provide a total of S for the walk, and successive sightings were recorded as being like the previous sighting or different from it. The final count consists of the total number of like pairs (a) and unlike pairs (b). The total number of pairs ($n = a + b$) is one less than the total number of individuals seen. Walks were carried out in the morning, starting at about 10.00 hr and in the afternoon at about 15.00 hr. The quantity D is calculated as a/n. It is an estimate of the probability of finding two like individuals in succession. It is based on a subset of the relative frequency data used to calculate Simpson's index, and is the inverse of that index as commonly presented.

Results

The number of sightings observed is shown in Table 1. The observed values of S and the calculated values of D are shown. The binomial standard error ($\sqrt{ab/n^3}$) for each estimate is also given. For an assemblage with equal frequencies of all species $D = 1/S$. The evenness, or nearness to this value, has therefore also been calculated as $(1-D)/(1-1/S)$. Because S and D are obtained separately it is possible for the evenness estimate to be greater that unity. When this occurred a value of 1 has been substituted. Means for the columns of interest are shown at the bottom of the table. The standard deviation of the D values (0.071) is almost identical to the average of the binomial standard errors of the individual estimates (0.075), indicating that the estimates are drawn from a population with common properties. Analysis of variance showed that there was no difference in result between times of day ($F = 0.79$). The largest effect was between observers ($F = 4.65$, 1/10 d.f., $P = 0.056$), followed by that between trails ($F = 3.65$, 3/10 d.f., $P = 0.052$). Neither of these values is formally significant, although they are both nearly so. A difference in score between observers could result from a difference in judgment of similar species; the mean D values for the two observers are 0.180 and 0.122. There was no difference in the number of species they scored (13.9 compared with 13.5). Mean D values for the four trails are 0.115, 0.216, 0.106, 0.170.

SOCIETY MATTERS

INTERNATIONAL YEAR OF BIODIVERSITY

Huge changes in the natural environment have taken place over the 75 years during which the AES has been in existence. In 2010, our 75th anniversary, the Society is pleased to be a supporting partner of the International Year of Biodiversity, a United Nations initiative to highlight the importance of the diversity of life on earth, and of its value to man. Further details of the IYB may be found on the Convention on Biological Diversity website http://www.cbd.int/2010/welcome/ and IYB activities planned for the UK are listed at http://www.biodiversityislife.net/.

THE HAMMOND AWARD

Members are reminded that articles published in the *AES Bulletin* are considered for this award, which was initiated in March 1982 in memory of Cyril O. Hammond (of Colyer and Hammond fame). The Award is given for the best contribution to the *AES Bulletin* on the theme of British Insects, in any one year. The winner will receive a Certificate and £100.

DATA PROTECTION ACT

All members should please note that all personal information supplied to the Society is treated in accord with the requirements of current data protection legislation and will be used only for the purposes of administering the Society. We will not divulge personal information to any third party unless legally obliged to do so. It is technically possible for us to generate membership lists but there are no plans to do so during this membership year.

* * *

MEMBERSHIP RENEWALS

Will members who have not already renewed their subscriptions please note that this will be the last issue of the Journal you will receive unless you renew soon.

AES Events Calendar

Please see the AES website for full and up to date listings of AES and other events.
All AES events are free to members and their guests.

Further details can also be obtained from the Secretary by post or via email (secretary@amentsoc.org)

EVENTS EARLY IN 2010

Saturday 20th February: Young Entomologists' Day @ Oxford University

Oxford University Museum of Natural History, Parks Road, Oxford OX1 3PW. 10:30 – 4:00.

In addition to tours of the Hope Collections for AES Members and their guests, this event includes a schedule of talks by young entomologists aged 4 to 17 in the Museum's Lecture Theatre. The talks will be formally adjudicated and prizes awarded for the best presentations. Information on the AES, National Insect Week and the new Angela Marmont Centre at the Natural History Museum will be on display. There is no charge for admission but anyone wishing to give a talk should complete a booking form (available to download from the events section of the AES website or from the Secretary (secretary@amentsoc.org) from whom more detailed information is also available).

AES 75th Anniversary Members' Day

This year's Members' Day will be held on **Saturday 24th April** at the Angela Marmont Centre for UK Biodiversity, the Darwin Building, Natural History Museum, Cromwell Road, London SW7 5BD. The proceedings will formally commence with the AGM at midday.

The recently opened Angela Marmont Centre aims to act as a facility to enable amateur naturalists and societies to study wildlife throughout the year. Entomologists can currently use the Centre in two main ways. Firstly, there is an identification and advisory drop-in service available on Thursdays, Fridays and Sundays between 10.00 am and 5.30 pm. Secondly, you can book a visit to the Centre to do your own research, using the study spaces, physical and online library resources and the 10,000 drawers of plants, animals, moths and butterflies provided. The Centre also offers opportunities to take part in 'Citizen Science' projects. Further information will be provided during Members' Day, and for those with internet access further details may also be found at the following web address: http://www.nhm.ac.uk/visit-us/darwin-centre-visitors/marmont-centre/index.html

Members' Day will include a series of talks on entomology and invertebrate conservation, including the Third Annual Leonard Tesch Lecture which this year will be delivered by AES President Dr Robin Wootton Hon FRES.

Space has been allocated for members to bring along specimens or other entomological items they would like to exhibit on the day. Historical items are particularly welcome. 'Behind-the-seen' tours of the Museum's entomological collections will be offered throughout the afternoon, and there will be a workshop and a children's 'Crafty Corner' insect crafts table. National Insect Week and other display tables will be present in the Cocoon area of the Darwin Centre, and refreshments will be available for members and their guests.

We plan to launch a new children's book on the day, in the 'Victorian story corner'. The working title of the book is 'The scary adventures of Basil the Beetle' and the author is Sonia Copeland Bloom, who will be present to sign copies. There will be a reading of the book by one of Sonia's children, both of whom are actors.

Notice of AES Annual General Meeting

This year's AGM marks 75 years of the AES and will take place at 12:00 midday on 24th April at the Neil Chalmers Lecture Theatre, the Angela Marmont Centre, Natural History Museum, Cromwell Road, London SW7 5BD, immediately prior to our Members' Day.

Following a successful term as our President, Dr Robin Wootton has agreed to be the AES Council's nominee for President for the period 2010-2011. Miss Kara Majerus was co-opted as a member of Council at our December meeting and is therefore subject to election at the AGM. The following Council members will retire by rotation and are willing to stand for re-election: Colin Hart; Martin Hough; Jacqueline Ruffle; Dr Phil Wilkins.

Council members standing for election / re-election or as Officers of the Society at the 2010 AGM are therefore as follows: President: Robin Wootton; Secretary: Dafydd Lewis; Treasurer: Peter May; Conservation Secretary: David Lonsdale; Bulletin Editors: Phil Wilkins and Martin Hough; General Editor: Jacqueline Ruffle; Exhibition Secretary: Wayne Jarvis; Advertising Secretary: Peter Hodge; ICN Editor: David Lonsdale; Wants & Exchange Editor: Peter May; Youth Secretary: Kieren Pitts; Bug Club Magazine editors: Dafydd Lewis, Kieren Pitts; Webmaster: Kieren Pitts; Council Member: Kara Majerus. Members of Council are also Charitable Trustees of the Society. There are currently four trustee vacancies, and the role of Habitat Conservation Officer is vacant. Nominations for Council, including anyone wishing to contest any of the above posts, are invited before or at the AGM. Nominations should be submitted by two members with the prior consent of the nominee.

AES Membership Rates 2010

Membership of the Society runs from 1st January to 31st December each year. New members will receive all publications published during the year of enrolment subject to availability, except for those joining on or after 1st October.

Members joining on or after 1st October will be deemed to have joined for the following year unless a specific request for membership of the current year is made. In such cases, the publications already published that year will be sent with the enrolment confirmation letter and the remaining ones received as they are published. A further membership subscription will be necessary for the following year.

If you have any queries about membership please contact us via the website, www.amentsoc.org or PO Box 8774, London SW7 5ZG

Individual Adult Membership

Membership sub-category	UK	Overseas
Bulletin only	£20.00	£25.00
Entomologist's Record only	£25.00	£30.00
Bug Club Magazine only	£20.00	£25.00

Individual Bug Club / Junior Membership

Membership sub-category	UK	Overseas
Junior under-18 (*Bug Club Magazine* only)	£12.00	£17.00
Junior aged 13-17 (*Bulletin* only)	£12.00	£17.00

Family or Combined Membership

Membership sub-category	UK	Overseas
Bulletin & Entomologist's Record	£40.00	£45.00
Bulletin & Bug Club Magazine	£28.00	£33.00
Entomologist's Record & Bug Club Magazine	£35.00	£40.00
Bulletin, Entomologist's Record & Bug Club Magazine	£48.00	£53.00

Associate / Institutional Membership

Membership sub-category	UK	Overseas
Bulletin only	£20.00	£25.00
Entomologist's Record only	£50.00	£55.00
Bug Club Magazine only	£20.00	£25.00
Bulletin & Entomologist's Record	£65.00	£70.00
Bulletin & Bug Club Magazine	£28.00	£33.00
Entomologist's Record & Bug Club Magazine	£65.00	£70.00
Bulletin, Entomologist's Record & Bug Club Magazine	£75.00	£80.00

The Amateur Entomologists' Society
PO Box 8774, London SW7 5ZG
www.amentsoc.org

If you have any problem working out your subscription please email the Registrar at registrar@amentsoc.org for advice.

Table 1. Data and estimates for butterfly surveys on four transects. Evenness estimates greater than 1 have been entered as 1. a: number of like pairs, b: number of unlike pairs, D: a/(a+b), SE = $\sqrt{ab/n^3}$, Evenness = (1-D)/(1-1/S), S: number of species recorded.

Trail	Observer	Time	a	b	D	SE	Evenness	S
1	1	am	5	31	0.139	0.058	0.94	12
1	2	am	2	12	0.143	0.094	0.94	11
1	1	pm	3	20	0.130	0.070	0.96	11
1	2	pm	1	20	0.048	0.047	1.00	11
2	1	am	5	13	0.278	0.106	0.77	18
2	2	am	5	20	0.200	0.080	0.87	12
2	1	pm	5	15	0.250	0.097	0.83	10
2	2	pm	3	19	0.136	0.073	0.97	9
3	1	am	2	21	0.087	0.059	0.97	17
3	2	am	3	17	0.150	0.080	0.90	17
3	1	pm	2	12	0.143	0.094	0.96	9
3	2	pm	1	23	0.042	0.041	1.00	18
4	1	am	8	24	0.250	0.077	0.80	16
4	2	am	2	31	0.061	0.042	0.99	18
4	1	pm	3	15	0.167	0.088	0.88	18
4	2	pm	3	12	0.200	0.133	0.87	12
means					0.151	0.075	0.92	13.7
SD					0.071			

The overall mean value of D of 0.151 ± 0.071 is significantly lower that the value of 0.250 ± 0.063 obtained in 2007 for the more disturbed area nearby, which contained the research camp and traditional gardens ($t = 3.98$, $P < 0.01$), but is not different from the mean of 0.140 ± 0.071 obtained on the less disturbed left bank of the river ($t = 0.41$).

Discussion

The results show that the sequential method can produce consistent estimates that characterize the fauna of a particular area. On a walk of approximately 1 hr an observer is likely to encounter roughly 14 species there, with a probability of seeing the same species twice in succession of about 15 per cent. This is a low level of repeatability, or high level of diversity, indicated here by an evenness value that is 92 per cent of the maximum. That similar diversity levels are not always found is shown by another sample made in cloud forest at a site on the western slope of the Andes, for which D was 0.608 ± 0.068 with a sample of 51 individuals in 11 species. Sampling took place on a morning with cloudy conditions and patches of sunshine in which two satyrine species were interacting and competing for good settling positions. This behaviour concentrated like individuals together. Later in the morning, when sunshine was more evenly spread, D dropped to 0.219 ± 0.073, with nine species. The sampling at the Payamino site was planned to look for such effects. In the event, no effect was found that could be put down to aggregation of common species or inactivity of the rarer ones, although mornings were often more cloudy and damp than afternoons.

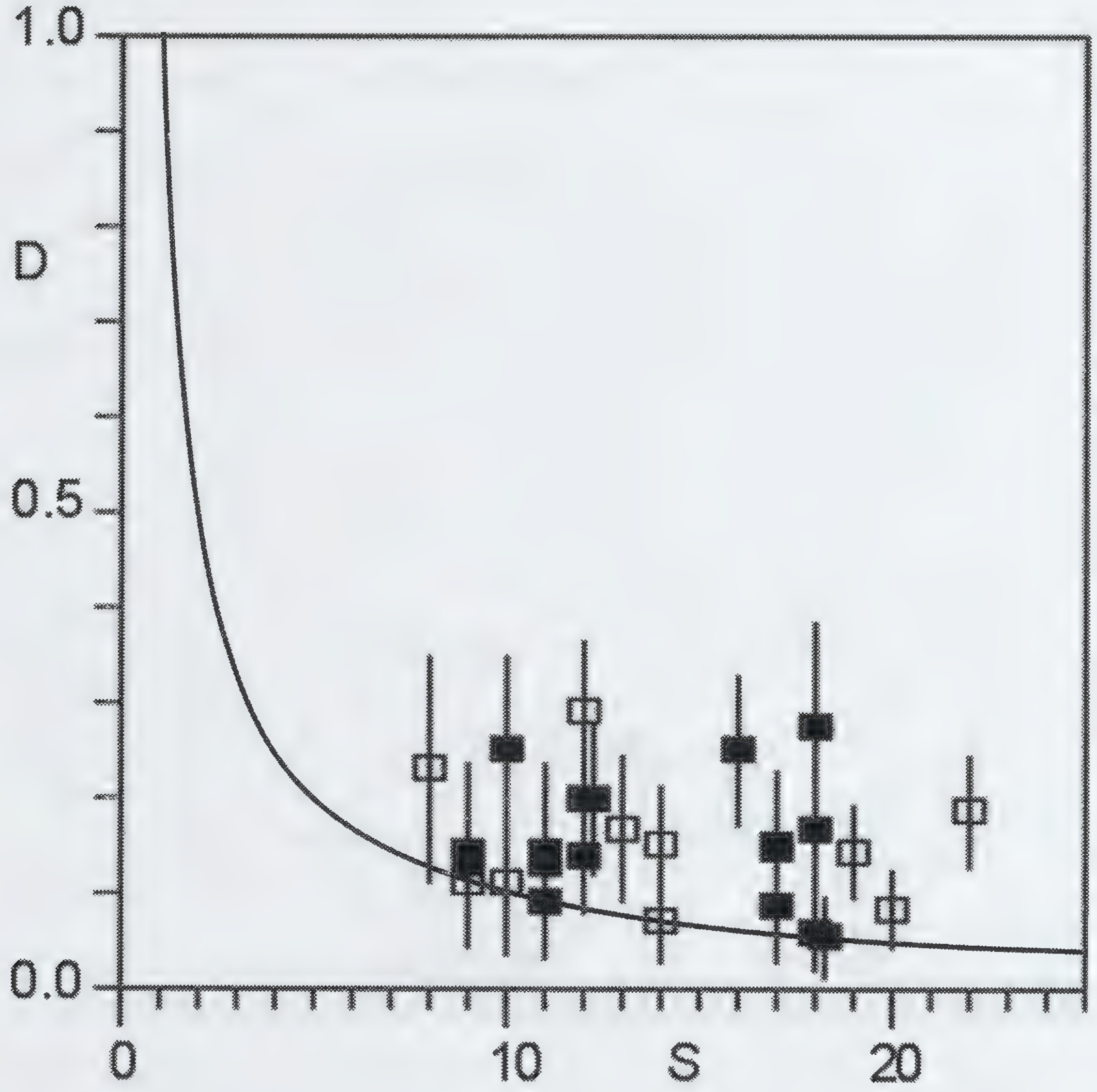

Figure 1. Relation of diversity (D) to species number (S) for data from the transect (solid squares) and 2007 left bank (open squares). The curve shows the minimum values D can take at different values of S. Standard errors are shown as vertical bars.

The taxonomic composition is less variable than the diversity, 44 per cent belonging to the nymphalid subfamily Satyrinae and 31 per cent to the Ithomiinae, mostly clearwing. Uehara-Prado & Freitas (2008) found 48 per cent ithomiines in a study of forested areas in SE Brazil and De Vries *et al.* (1999) 39 per cent at Jatun Sacha, not far from the present site.

A feature of diversity which we have not attempted to evaluate is character diversity (Williams & Humphries, 1996). A pair of butterflies from the same group, such as the 48 per cent ithomiines we encountered, many of them mimics of each other, may raise interesting questions about mimicry, while a pair from different groups, satyrine and pierid, for example, may point to a wider range of habitat exploitation.

Figure 1 shows that for the combined results from the present study and the 2007 left bank survey there is a flat distribution of D as S increases. Simpson's index is relatively invariant with S and tends to measure degree of dominance of the most common species (May, 1976; Magurran, 1988; Mendes *et al.*, 2008). For our purposes these are useful properties. S can be available as a statistic whatever way diversity is calculated, so that the index does not need to be sensitive to it. Unless intensive monitoring is possible the fact that one or two species predominate may tell us more about the quality of a site than knowing some species are very rare. It would be interesting to compare less species-rich communities in the UK, with these figures from a tropical habitat.

Acknowledgements

This work was carried out on a Manchester University field course at San José de Payamino, Orellana, Ecuador. We thank Johan Oldekop for discussions and for allowing us to use his transect system.

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Important records from the Rothamsted Insect Survey light-trap on Guernsey 2008

One of the important characteristics of Rothamsted traps is the consistency of trapping, often meaning that rarities and vagrants are caught more regularly than would occur in a trap run infrequently. Such trapping can provide greater understanding of a species' movements and Rothamsted traps have often produced the first data for a species colonising a new area, or they have proved the existence of over-looked local populations.

The Rothamsted light-trap at St. Martin's on Guernsey (site 577) has been operating since the 21 April 1999 and continues to provide new information on the Island's moth fauna. The Scarce Hook-tip *Sabra harpagula* Esp. (Lep.: Drepanidae), for example, has been recorded twice on Jersey, both times in the Rothamsted trap at Trinity (*Ent. Rec.* **118**. 25.ix.2006. 202. and **120**. 25.v.2008. 124.). However, trap 577 has now recorded the first specimen for Guernsey, with a singleton caught on 12/13 May 2008 and identified by genitalia by David Agassiz. This is the third *S. harpagula* record for the Channel Islands and may provide some evidence for a spreading population. On the other hand, the foodplant (Small-leaved Lime *Tilia cordata* Mill.) is not found in the vicinity of the trap and is uncommon on Guernsey (R. Austin, pers. comm.), so perhaps this moth was a vagrant from Jersey or France. Nonetheless, this is a species to watch in the Channel Islands.

On the night of 30/31 July 2008 the Guernsey trap produced singletons of two species new to the Channel Islands:

Ethmia quadrillella Goeze (Lep.: Ethmiidae) is a very handsome black and white moth. Residing in a variety of habitats, the larvae live in a silk web and feed upon the foliage of Common Comfrey *Symphytum officinale,* Tuberous Comfrey *S. tuberosum*, Common Gromwell *Lithospermum officinale*, Lungwort *Pulmonaria officinalis* and Wood Forget-me-not *Myosotis sylvatica* (Emmet & Langmaid, 2002. *The Moths & Butterflies of Great Britain & Ireland* **4(1)**. Harley). Occurring locally, mostly in the east and south-east of England, and throughout most of Europe, it is possible that this specimen did not originate on Guernsey. However, Comfrey does occur rarely in the wild on the Island and probably also in gardens (R. Austin, pers. comm.) and therefore the moth could derive from a small undiscovered colony.

Coleophora clypeiferella Hofmann (Lep.: Coleophoridae) is rather plain and indistinct in general appearance, but identification is aided by very obvious peg-like structures on the sclerotised abdominal tergites (R. Austin, pers. comm.). The larvae, protected within a silk case covered with frass and seed fragments, feed on the seed heads of Fat-hen (*Chenopodium album*). *C. clypeiferella* is found in central and south-eastern England, and on the Continent its range spreads from Central Europe north into Scandinavia and east to the Ural Mountains (Emmet,

1996. *The Moths & Butterflies of Great Britain & Ireland* **3**. Harley). From this distribution, and the common food plant, it remains to be determined with certainty whether this specimen was a vagrant or whether it originated locally.

Many thanks to Rich Austin for information regarding the specimens and for his hard work identifying the Rothamsted catches, and to Terry Brokenshire at Raymond Falla House for operating the trap. — PHILIP J. L. GOULD, Co-ordinator of the Rothamsted Insect Survey Light-trap Network, Plant & Invertebrate Ecology Department, Rothamsted Research, Harpenden, Hertfordshire AL5 2JQ (E-mail: phil.gould@bbsrc.ac.uk).

Ramphus oxyacanthae (Marsham) (Col.: Curculionidae) reared from Pear *Pyrus communis*

The distribution map for *Ramphus oxyacanthae* on the National Biodiversity Network Gateway (*http://data.nbn.org.uk/interactive/map.jsp?srchSp=NBNSYS0000025523*) shows this species to be widespread in England and Wales. It is a late-autumn leaf miner, which produces roundish, dark brown mines in the leaves of hawthorn *Crataegus* spp. Good photographs can currently be seen on the British Leafminers web site at *www.leafmines.co.uk/html/Coleoptera/r.oxyacanthae.htm*). Currently, *Crataegus* is regarded as the only confirmed host for *R. oxyacanthae* in the UK (see the hostplant checklist by Plant & Pitkin at *www.leafmines.co.uk,* which is the source of the information given at *www.nhm.ac.uk/research-curation/research/projects/british-insect-mines/database/Checklist.do?pg=cl&flyId=1417*).

In October 2007, I found some tenanted mines in the leaves of a Pear *Pyrus communis* tree in the Woolhope area of Herefordshire and on the basis of the mine morphology and the shape of the larvae these were tentatively identified as belonging to *R. oxyacanthae*. Later in the month I found the same type of mines in pear leaves in the Suckley Hills (Worcestershire) and in Cheltenham (East Gloucestershire). However, attempts to rear adults and thus clinch the identification of the miner were not successful.

A repeated set of experiences in the autumn of 2008 were more productive and a series of adults was reared from mines from the pear tree at the Cheltenham site. Their identification as *Ramphus oxyacanthae* was confirmed by Keith Alexander. In 2009, more examples of the mines were found including locations in West Gloucestershire and examples on *Pyrus syriaca* at Westonbirt Arboreteum.

Morris (1993. A review of the British species of Rhynchaeninae (Col., Curculionidae). *Ent mon. Mag.* **129**: 177-197) notes that *R. oxyacanthae* has been recorded from a range of woody *Rosaceae*, including species of *Pyrus*, *Malus*, *Prunus*, *Mespilus* and *Cydonia*, although it is not clear whether these records refer to adult insects taken from the plants or to mines on the leaves or indeed relate to records from Britain or elsewhere in Europe. Hering (1957. *Bestimmungstabellen der Blattminen von Europa: einschliesslich des Mittelmeerbeckens und der Kanarischen Inseln* **1:** 144. Junk's Gravenhage), lists pear as one of the many food-plants of the beetle. Thus the relationship between the beetle and pear trees has been broadly established, but the records above specifically show that in the south-west Midlands of England Pear is a frequently used host for *R. oxyacanthae*.

I am most grateful to Keith Alexander for determining the identity of my specimens. — Robert Homan, The Apiary, Swindon Lane, Cheltenham, Gloucestershire GL50 4PD.

Editorial Comment. During the preparation (and maintenance) of the comprehensive host-plant list on the British leaf-miners web site at *www.leafmines.co.uk*, Brian Pitkin and myself were extremely careful to include for each leaf-mining insect species only those host plants whose use by a given insect could be convincingly supported by (usually published) evidence and, most importantly, only those recorded in the British Isles. In this context it is worth mentioning that casual reference to food-plants on many web sites have been largely ignored as either unproven or unreliable (though this does not apply in the case of *Rhamphus oxyacanthae* for which no web site references to this food-plant in the British Isles could be found). Whilst Mike Morris lists a number of rosaceous plant species in his paper cited above it is not clear, as indicated by Mr Homan, whether these records refer to adult insects taken from the plants or to mines on the leaves or indeed if they relate to records from Britain. We were, of course, aware of references to *Pyrus* as a food-plant for *Rhamphus oxyacanthae* in the European literature, but were not, and remain not until now, aware of any for the British Isles. Robert Homan's record is, consequently, a new British Isles host-plant; entomologists whose field experience disagrees are warmly invited to revive their currently 'dead' information via publication here or in one of several other suitable journals that are currently available. — Colin W. Plant.

Calybites phasianipennella (Hübner) (Lep.: Gracillaridae) larvae in Berkshire

I have searched for the characteristic larval feeding 'cones' of *Calybites phasianipennella* (Hb.) at suitable sites in Berkshire for several years now, with no success until the autumn of 2008. On 27 September 2008, while walking the edge of a freshly harvested corn field to the north of Bear Wood near Wokingham, Berkshire I chanced upon some large plants of redshank *Polygonum persicaria* with their characteristic spikes of pale pink flowers and dark green leaves with dark purplish central blotches. On examining these plants I noticed some inflated

Phyllonorycter-like blister mines in the upper surface of several leaves. The lower surfaces of these mines were distinctly brown and creased, and closer examination of the affected plants revealed some leaves near the mines from which longitudinal strips had been cut. The underside of these leaves revealed that the missing strips had been coiled up to form rough cones, and secured with silk to the lower leaf surface. There was no doubt, these were the larval workings of *C. phasianipennella*. A search of the plants revealed a strong colony, with around 20 cones being located in a quarter of an hour. A small sample was taken, from which moths emerged on 9 October 2008.

A few days later, on 1 October, I discovered a similar site with redshank growing at the edge of a freshly harvested grain field at Jealott's Hill, Berkshire. Searching these plants revealed more cones of *C. phasianipennella*, from which a moth emerged two days later.

This moth is not common in Berkshire. Brian Baker (*Butterflies and Moths of Berkshire*, 1994) cites individuals recorded from Cothill in 1922 and 1924. Further examples were recorded from Ascot in 1968 and adults were reared from larvae found commonly at Silwood Park on common sorrel *Rumex acetosa* in 1979. The last recorded examples in Baker are from Maidenhead in 1989, but since then this species has not been seen in Berkshire (Martin Harvey, County Lepidoptera Recorder, pers. comm.). Therefore, these records from Bear Wood and Jealott's Hill are significant.— I. SIMS, 2 The Delph, Lower Earley, Reading, Berkshire RG6 3AN.

Tuta absoluta (Meyrick, 1917: Lep: Gelechiidae): an adventive species new to Britain

On 20 December 2009 my attention was drawn to an unusual yellowish blotch on the skin of a fruit from a pack of Spanish tomatoes *Solanum lycopersicum* purchased in a Cheltenham supermarket two days earlier. In good light it was possible to see a caterpillar apparently mining the tomato just below the surface. An initial search through *Moths and Butterflies of Great Britain and Ireland* volume 7, part 2 (Harley Books), revealed five possible Lepidoptera candidates associated with tomato, but further research raised doubts about all of these as possibilities. Recourse to the internet produced another potential species in the form of *Tuta absoluta*.

The tomato was photographed and kept warm, either in the airing cupboard or on a sunny radiator and on 22 December the caterpillar emerged. It was approximately 7mm in length and pink/green in colour, depending on the angle of view. It had a narrow black band across the prothoracic plate, thickening slightly towards the centre where it was divided by narrow pale band. This contrasts with the wider black plate of *Phthorimaea operculella*, another solanum feeding gelechid and possible confusion species.

On 23 December the caterpillar was put in a clean glass jar with some pieces of kitchen roll and placed in the airing cupboard. The following day there was evidence of a slight spinning and by the 31 December an obvious pupa had formed. The moth emerged on 5 January 2010 and photogaphs of all stages were posted on the Yahoo Micromoths discussion group, and Roger Gaunt, the county recorder for Gloucestershire and FERA Plant Health and Seeds Inspectorate were informed. RG subsequently received a response from John Langmaid thus: "I agree that the species is *Tuta absoluta*. Yet another adventive species which I suppose ought to be put onto the British list as it has been bred in this country." (Gaunt, pers. comm.)

Tuta absoluta is a South American gelechid, first recorded in Europe in Spain in 2006. Since then there have been records from other parts of the Mediterranean basin, predominantly feeding on tomatoes. Indeed in Spain the moth is regarded as a serious pest on tomato crops (see, for example *www.tutaabsoluta.com www.pestalert.org/viewNewsAlert.cfm?naid=78*). Until 2009, records in northern Europe were confined to interceptions at tomato packing stations in the Netherlands and the UK, but in the summer of 2009 FERA reported outbreaks of the moth in Yorkshire and Worcestershire (see *www.fera.defra.gov.uk/plants/plantHealth/pestsDiseases/interceptionCharts.cfm* and *www.fera.defra.gov.uk/plants/plantHealth/pestsDiseases/tomatoMoth.cfm*. These apparently unpublished reports and the moth from Cheltenham constitute the first records of *Tuta absoluta* in Britain.

I am very grateful to my keen-eyed daughter, Rebecca, for noticing the mine in the tomato. — ROBERT HOMAN, The Apiary, Swindon Lane, Cheltenham, Gloucestershire, GL50 4PD.

An alternative to slide-mounting for moth genitalia

A water-soluble resin is used by dipterists, coleopterists and others for mounting small fragile insect parts. These are placed in a small drop of the solution on a piece of card and secured with the rest of the specimen on its pin. I find I am increasingly using this for genitalia of smaller moths too. I find it particularly useful where the dissection has been performed for purposes of identification only, with no desire to create a reference mount. This might be for species where I already have a reference slide, or when identifying a moth for another entomologist who has no microscope slide collection. It also has the edge when sending the specimen through the post.

When mounting parts of insects from the other Orders there is often no need for intial maceration, but to avoid a soup of moth scales in mountant it helps to have done this. After blotting off excess liquid, the dissection and identification is performed in chalk-free water. I have always used clean rainwater. The washing needs to be sufficient to guarantee that all caustic is eluted. There is no need to neutralise it with acid as some schedules do. A drop of mountant is then placed on a piece of card of suitable size. The preparation is then blotted off and placed in the mountant. If too much water is carried over with the specimen, it can cause the mountant to spread out too thinly or even soak into the card, so this blotting is important. The specimen can be manipulated for at least a few minutes in cool conditions. It is then placed on the pin with the rest of the moth.

The mountant is as clear as glass, and structures can be plainly examined. Unlike a mount under a coverslip however, the surface is not optically flat. If the mount is very heaped-up, as it may be when the genitalia will not lie flat, there is some distortion when examined under the microscope. If necessary, a little more mountant can be added to lessen this, or the specimen soaked off with water in a few minutes. There is a size limit: if the specimen cannot be immersed in a drop of mountant it is too large for this technique.

I have an interest to declare. The mountant mostly used is DMHF (dimethyl hydantoin formaldehyde). At the moment too few entomologists are using it to create a worthwhile market. A small shift in practice among lepidopterists could alter this. At the moment a few of us are looking into buying a supply as a group, but the supply will be industrial, and the minimum order large. Should this note reach the attention of anyone who might want to join us, I would be pleased to hear.

A highly informative account of this mountant, and of a possible alternative, is given by Gianfranco Liberti (2005. Improved solutions of two water-soluble media for mounting beetle genitalia. *The Coleopterist* **14**(1): 29-35. — Richard Dickson, 39 Serpentine Road, Fareham, Hampshire PO16 7ED (E-mail: dickson994@btinternet.com).

Interesting Lepidoptera in Devon during 2009

On our Field Meeting to Halsdon Nature Reserve, near Dolton, 29.v.2009, a specimen of *Moma alpium* (Osbeck) (Noctuidae) the Scarce Merveille du Jour came to light. This is not only a new site for the species, but the date is around a month early.

Ivan Lakin and Kevin Rylands, both Members of Devon Moth Group, were moth trapping on Dawlish Warren, near the marshy area on 25.vi.2009, when an example of *Scopula immutata* (L.) (Geometridae) Rosy Wave came to their light. The identification was confirmed by myself and the specimen is preserved in my collection. After some discussion, it is generally agreed that this was most likely an immigrant example. Nevertheless, it is a new species for Devon.

On 29.vi.2009, Rob Wolton ran his lights at Tor View Marsh, Whiddon Downand attracted *Lacanobia splendens* (Hb.) (Noctuidae) Splendid Brocade. I confirmed the identity and retained the specimen in my collection. This is the first record of this species for Devon.

The discovery of *Dryobota labecula* (Esper) Oak Rustic (Noctuidae) in Devon at Holcombe on 9.xii.2005 was reported in the 2005 Immigration Review in this journal (*Ent. Rec.* **120**: 50 & 64). During 2009, two further specimens were taken. One was a male at the original trap site on 28.x.2009; the other was a female at a site nearby, where there is a lot of *Quercus ilex* (Holm Oak), on 30.x.2009. This find makes it almost certain that the species is now breeding in Devon. The female, after a lot of persuading, laid around 15-20 eggs

An example of *Catocala sponsa* (L.) (Noctuidae) Dark Crimson Underwing was taken in my own Teignmouth garden on 21.viii.2009. The only previous records of this species in Devon are those given in the *Devonshire Association* Record Book and are by H. A. Kennard at Sidmouth on 24.viii.1984 and 27.viii.1984. These were confirmed by D. Carter and recorded in *Entomologist's Gazette* **36**: 173, in which it is stated that the specimens would be lodged with the 'Devon Collection' which is presently housed at Exeter Museum. Subsequent enquiries by myself indicate that both these specimens have been destroyed. The current specimen, held in my own collection, is thus the only extant Devon example. — ROY MCCORMICK, 36 Paradise Road, Teignmouth, Devon.

Crombrugghia laetus (Zell.) (Lep.: Pterophoridae) new to Ireland

On the afternoon of 27 June 2006, a male plume moth was netted by TB at Tramore (Irish grid reference S 578014), Co. Waterford (H6) on the south-east coast of Ireland. Although recognized as a species close to *Oxyptilus parvidactylus* (Haworth, 1811) upon preparation of a genitalia slide by KGMB, its identity remained inconclusive until recently seen by Colin Hart who identified it as *Crombrugghia laetus* (Zeller, 1847), new to the Irish fauna.

A rare immigrant species, principally resident in the Mediterranean area, *C. laetus* is mapped by Fauna Europaea (see *http://www.faunaeur.org*) from the Canary Islands, France, Great Britain, Madeira, Portugal and Spain amongst others. Elsewhere it is also known from North Africa and Asia Minor. The specimen has been lodged with the National Museum of Ireland, Natural History.

Our thanks go to Colin Hart for kindly identifying the specimen. — TONY BRYANT, Priest's Road, Tramore, Co. Waterford, Ireland & K. G. M. BOND, Department of Zoology, Ecology & Plant Science, University College, Cork, Ireland.

AN INITIAL STUDY OF THE FEEDING AND EGG-LAYING PREFERENCES OF BARK DWELLING PSOCIDS (PSOCOPTERA) USING COMPOSITE BARK BLOCKS

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Abstract

In vitro studies on the feeding and egg-laying preferences of a selection of species of Psocoptera were undertaken. It was discovered that *Loensia variegata* (Latreille), Psocidae, is capable of eating alga (probably mainly *Apatococcus lobatus*) and the lichen *Xanthoria parietina.* It did not feed on any of the crustose lichens offered to it or two other foliose lichens. A sample of bare bark showed signs of having been eaten. Eggs were laid primarily on foliose lichens (*Parmelia sulcata* and *Melanelia subaurifera*) but also on one of the crustose lichens (*Cliostomum griffithii*). *Trichadenotecnum sexpunctatum* (L.), Psocidae, fed upon alga (probably mainly *Apatococcus lobatus*), the crustose lichen *Cliostomum griffithii* and the foliose lichens *Parmelia sulcata* and *Xanthoria parietina*. No eggs were laid. *Pteroxanium kelloggi* (Ribaga), Lepisopscocidae, was only found to eat alga (probably mainly *Apatococcus lobatus*). No eggs were laid. Result of the study using *Reuterella helvimacula* (Enderlein), Elipsocidae, was inconclusive.

Keywords: Psocoptera, feeding studies.

Introduction

The psocid species *Loensia variegata* (Latreille) (Plate 4) is generally only recorded in low numbers on the trunks of trees with one specimen per tree being the norm. Consequently the author was surprised to find at least fifteen specimens on the trunks of three trees (two oak, one sycamore) at Rosebery, Midlothian (O.S. grid reference NT 304577) on 16.viii.2009. One possible explanation of the find was that the trunks of these trees held exceptionally large amounts of *L. variegata*'s preferred foodstuff.

Little is known about the food preferences of barkflies (outdoor Psocoptera) with Broadhead's studies of species occurring in larch plantations in Yorkshire providing the principle work (Broadhead, 1958). Twenty-four psocid species were recorded during these studies and food preference experiments were carried out on the commonest nine species: *Philotarsus picicornis* s.l., *Reuterella helvimacula, Elipsocus westwoodi* (now *E. pumilis*), *E. mclachlani* (now *E. abdominalis*), *Amphigerontia bifasciata, A. contaminata, Mesopsocus immunis* and *M. unipunctatus*. In these experiments specimens of each species were given the choice of feeding on lichen or alga (using composite twigs) and their preferences determined by 1) their proximity and the proximity of their faeces to each food type and 2) the composition of their gut contents. At the time of the study the only lichen present in the plantations was the pollution-tolerant *Lecanora conizaeoides* and the alga was *Pleurococcus* (not identified to species level). The study demonstrated that two species, *R. helvimacula* and *E. abdominalis,* preferred to feed on the lichen whereas the other seven preferred alga.

The food preferences of outdoor species other than the ones in Broadhead's study are not known; consequently the author devised an experiment to find out what epiphytes *Loensia variegata* would eat.

The trunks of the trees each had a number of epiphyte zones as follows 1: areas of dry bark lichen communities consisting predominantly of crustose lichens, 2: areas that were more dominated by foliose lichens, 3: algae-dominated areas and 4: virtually bare bark. The places where the specimens of *L. variegata* were resting on the trunk were found to be predominantly in the dry bark areas dominated by crustose lichens. The assumption was that the most likely foodstuff for *L. variegata* was one or more of the crustose lichens.

Other bark dwelling psocid species (*Trichadenotecnum sexpunctatum, Pteroxanium kelloggi* and *Reuterella helvimacula*) were also recorded on the trunks and the study was extended to include these species. These experiments were designed to determine which specific lichen/alga species were preferred by each psocid species.

Method

In this study the choice of foodstuff was provided using composite blocks of epiphyte-covered bark approximately 1.5 x 1.0 cm consisting of six mini-blocks of approximately 0.5 x 0.5 cms. The six mini-blocks were glued onto thick cardboard. One of the mini-blocks was used to support a composite block number written on paper, the remaining five had coatings of different epiphytic lichen/alga species (Plate 5). Each coating consisted predominantly of one species except one alga mini-block that had a mixture of two algae.

Each composite block was then photographed, placed in a covered Petri dish, and specimens of one of the psocid species placed in the dish. After a variable number of days the composite block was re-photographed and the new photograph compared with the original to determine where feeding damage had taken place. Eggs were sometimes laid and notes were kept of the numbers and positions of the eggs.

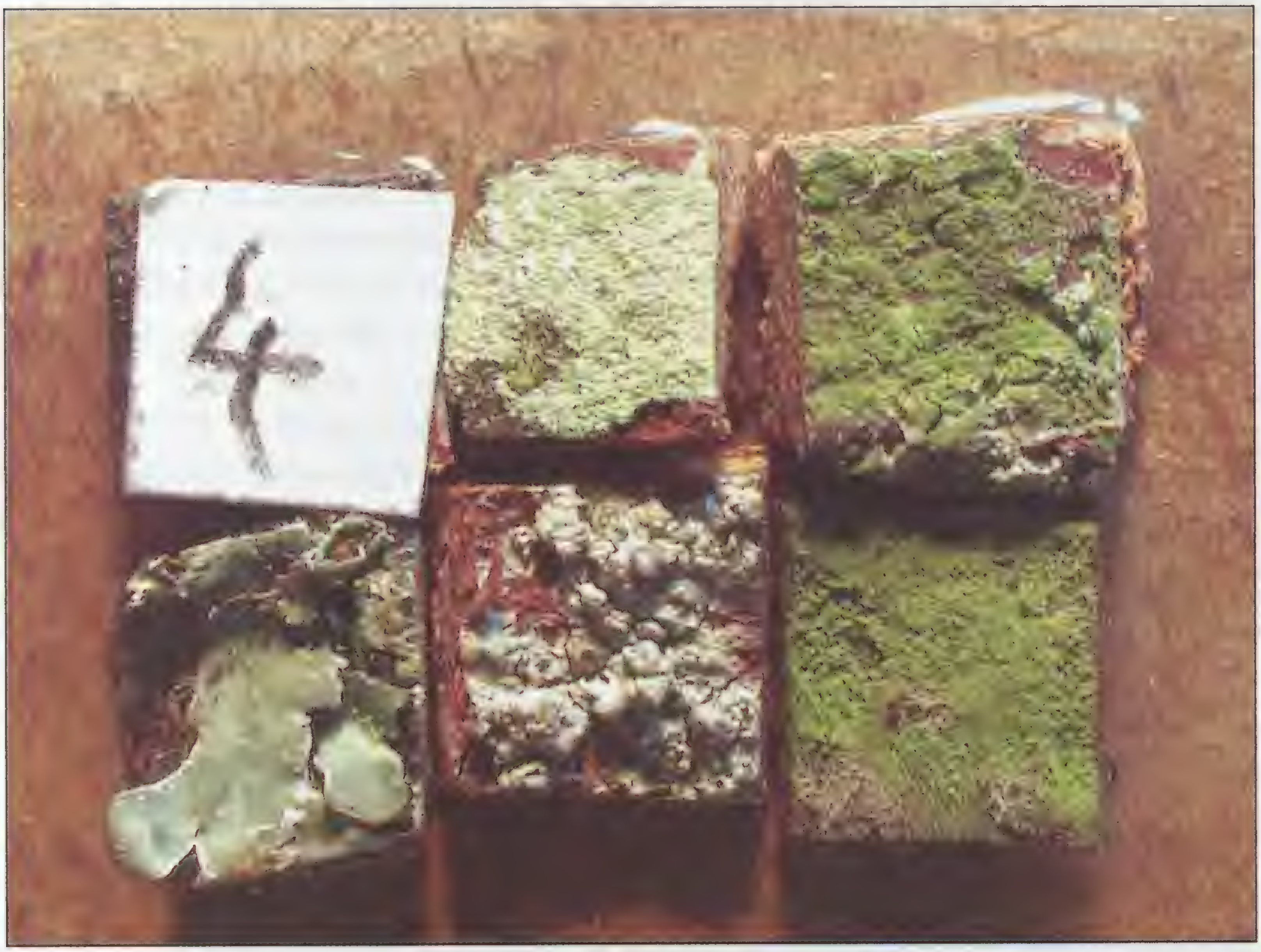
Results

In order to estimate how readily the insects fed on the feeding blocks two measures were needed – how much time they had to feed (feeding time) and how much food was eaten during that time (feeding damage).

Feeding time (measured in days) is the pooled time that all the individual insects had to feed on a block. For example if five specimens were on a block for three days the feeding time would be 15 days. It was noted that the insects only lived for a limited time during the study (ranging from one to seven days).

Feeding damage would ideally be measured in terms of the weight or volume eaten. Since the main purpose of this study was to determine whether or not a

Plate 4. *Loensia variegata* (Latreille), Rosebery. Midlothian, 2009.



BLOCK NUMBER	A	B
C	D	E

Plate 5. Example of a 'composite block' and mini-block position key.

particular epiphyte species was eaten a cruder measure was used: the area of damage to the epiphyte. The area of damage is the area where significant feeding has taken place (not just a slight grazing of the surface).

A coding system has been used to represent the various degrees of feeding damage:

0 – no damage;
1 – slight damage (<1% of area);
2 – moderate damage (1-5% of area);
3 – substantial damage (>5% of area).

The feeding results for *L. variegata*, *T. sexpunctatum* and *P. kelloggi* are shown in Table 1.

Species accounts

Loensia variegata (Latreille)

Two female specimens were used in the study. Initially both specimens were allowed to feed on one composite block but it was noticed that they seemed to avoid being in close proximity to each other. If one specimen was dominant then it might have prevented the other from feeding, so it was decided to only use one specimen per block.

Four of the epiphytes on composite block Lv1 were found on the trees at Rosebery (one alga, two crustose lichens and one foliose lichen). An additional crustose lichen, *Lecanora expallens* from a different site was also included to test whether the specimen would only eat lichens from the favoured site. It was found that only the alga was eaten. The alga on the block was identified as a mixture mainly consisting of *Apatococcus lobatus* with some *Trebouxia* sp. (darker green than *A. lobatus*). After feeding had taken place a close examination of the mini-block found that the remaining algae had a higher proportion of *Trebouxia* sp. than before feeding.

It was also noticed that over the period eight eggs were laid on the foliose lichen (*Parmelia sulcata*). In this block the foliose lichen mini-block was positioned adjacent to the alga mini-block (positions B and E – see Fig. 1) so it was feasible that the insect only laid eggs on it because it was in close proximity to the alga food source. A second composite block, Lv2, was made to test whether this was true and also to discover whether there was a preference for different sources of algae. In this second block the foliose lichen (again *P. sulcata*) was moved to the opposite end of the block from the algae mini-blocks (position C). In Lv1 the alga was growing on sycamore bark; in Lv2 a second mini-block was added with alga on Sitka spruce bark (solely *Apatococcus lobatus*). The results showed that again only alga was eaten with grazing on both algae mini-blocks. Over the period three eggs were laid on the foliose lichen and in addition two eggs were laid on one of the crustose lichens (*Cliostomum griffithii*).

Since eggs were laid on the foliose lichen on both blocks this led to the question of whether the particular lichen species was significant and composite block Lv3 was made to investigate this. This block consisted of one alga, three foliose lichens and one bare bark mini-blocks. In this case two eggs were laid on the same foliose lichen as on blocks Lv1 and Lv2 (*Parmelia sulcata*) and, in addition, one egg was laid on *Melanelia subaurifera* (Plate 6). Again the alga was eaten but, unexpectedly, one of the foliose lichens (*Xanthoria parietina*) was also extensively eaten. The bare bark mini-block showed some signs of grazing.

Trichadenotecnum sexpunctatum (L.)

Five female specimens were used in the study. Unlike *L. variegata*, the specimens appeared to tolerate the presence of other individuals on the composite blocks. All five specimens were allowed to feed on the same block to ensure that feeding damage was noticeable as quickly as possible.

The epiphytes on composite block Ts1 consisted of one alga, three crustose lichens and one foliose lichen. In the first half of the feeding period (14 days) three of the epiphytes were eaten: the alga, *Apatococcus lobatus/Trebouxia* sp. mixture, the crustose lichen, *Cliostomum griffithii* and the foliose lichen, *Parmelia sulcata*. The whole thallus of *P. sulcata* was eaten in one area of the mini-block, in another area, only the upper cortex. In the second half of the feeding period (14 days) only *P. sulcata* was eaten. No egg-laying was observed.

In order to investigate which other lichen species *T. sexpunctatum* would eat, one specimen was allowed to feed on composite block Ts2 which consisted of one alga, three foliose lichens and one bare bark. Only the lichen *Xanthoria parietina* was eaten while the *Parmelia sulcata* that was previously eaten on Ts1 was untouched. Again no egg-laying was observed.

Pteroxanium kelloggi (Ribaga)

Three specimens of *P. kelloggi* were allowed to feed on a block consisting of two algae, two crustose lichens and one foliose lichen. The specimens (which were noticeably fast moving) had the opportunity to feed for 13 days but appeared reluctant to approach the composite block. If placed onto the block they would quickly move off. However a moderate amount of feeding damage was noted on both the algae mini-blocks.

Reuterella helvimacula (Enderlein)

Five female specimens of *Reuterella helvimacula* were allowed to feed on a block consisting of one alga, three crustose lichens and one foliose lichen. This species is significantly smaller than the other species in the study and it was noticed that the specimens entered the crevices between the blocks where they produced the characteristic webbing. Slight damaging was noted on the epiphytes but the lost fragments were always on the edge of the mini-blocks and it was feasible that they had been dislodged rather than eaten. Consequently the study was considered inconclusive and the results have not been included in Table 1.

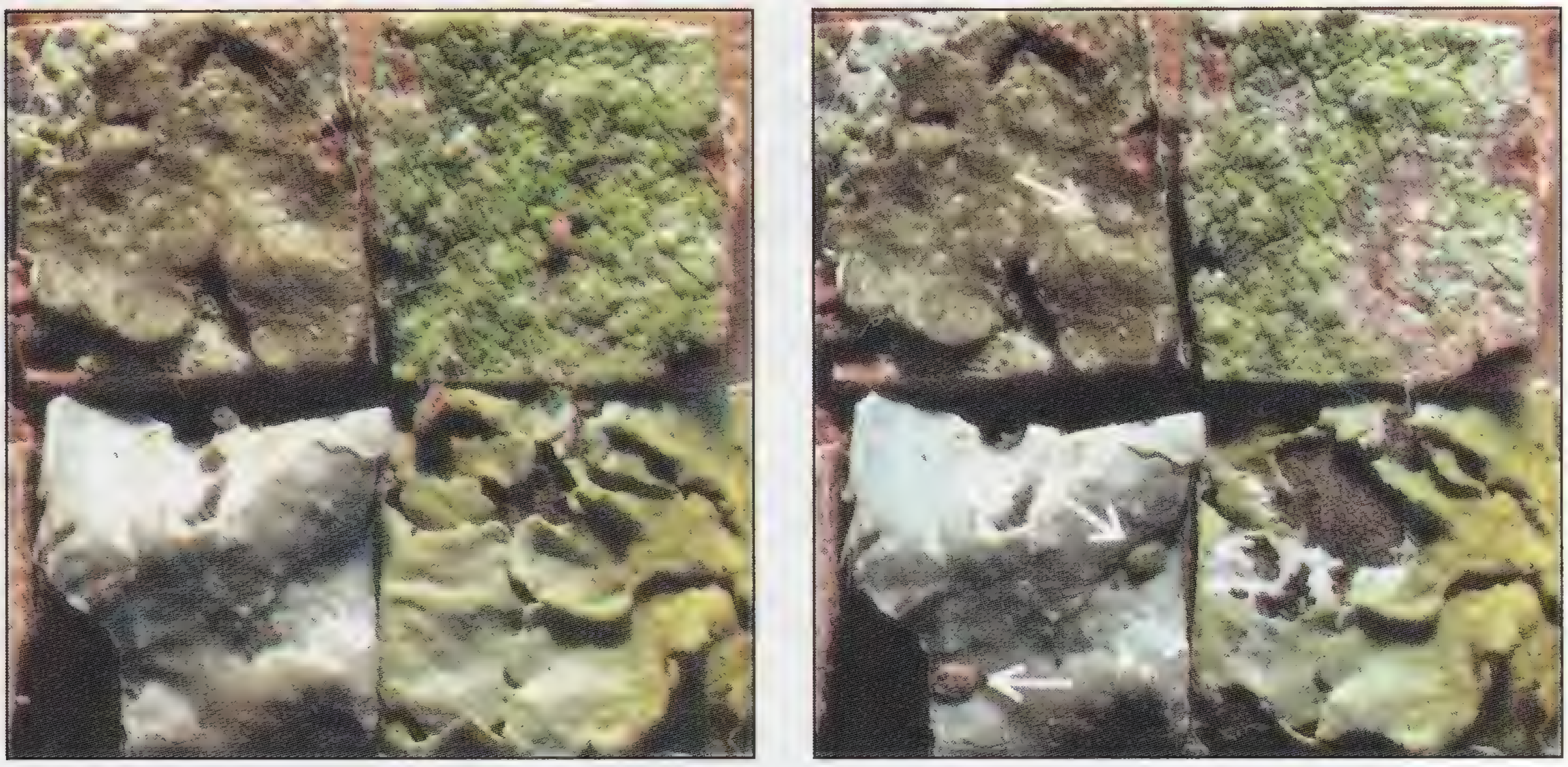


Plate 6. Composite block Lv3 (component squares A, B, D & E) before (left) and after (right) feeding and egg-laying by *Loensia variegata*.

Table 1. Composite block feeding results for three psocid species.

Psocid species	***L.variegata***			***T. sexpunctatum***		***P. kelloggi***
Composite block code	Lv1	Lv2	Lv3	Ts1	Ts2	Pk1
Feeding time (days)	3	5	4	28	4	9
Algae:						
Apatococcus lobatus		3				2
A. lobatus/Trebouxia sp.	3	3	3	2	0	2
Crustose lichens:						
Cliostomum griffithii	0	0		2		0
Lecanora expallens	0	0		0		0
Lepraria incana	0			0		
Foliose lichens:						
Melanelia subaurifera			0		0	
Parmelia sulcata	0	0	0	3	0	0
Xanthoria parietina			3		2	
No epiphytes						
Bare bark			1		0	

Discussion

The study shows that different psocid species are capable of eating different alga/lichen species. *T. sexpunctatum* ate the greatest diversity of species (4), followed by *L. variegata* (2) and finally by *P. kelloggi* (1).

Although the primary aim of the study was to find out which alga/lichen species the different psocids were capable of eating, a secondary aim was to find out whether they had preferred foodstuffs. *L. variegata* fed on both alga (probably mainly *A. lobatus*) and the foliose lichen *X. parietina* and the evidence from feeding block Lv3 suggested that both species were equally palatable. *T. sexpunctatum* ate a greater diversity of species. The evidence from block Ts1 suggests that it may prefer to eat the lichen *P. sulcata* (substantial damage) over the lichen *C. griffithii* (moderate damage) and the alga (probably mainly *A. lobatus*) (moderate damage). The evidence from block Ts2 suggests that it strongly favours eating the lichen *Xanthoria parietina* (moderate damage) over *P. sulcata* (no damage) and alga (no damage).

The alga on block Lv1 was identified as a mixture mainly consisting of *Apatococcus lobatus* with some *Trebouxia* sp. After feeding, the algae remaining on the block was closely examined and was found to have a higher proportion of *Trebouxia* than before feeding. This observation suggests that *L. variegata* may have a preference for feeding on *A. lobatus* over *Trebouxia*. However, more systematic experiments using pure cultures of algae species and, ideally, gut content analysis would be necessary to prove this. The possibility that different species of *Trebouxia* may have different palatability would also need to be investigated. Consequently it was not considered worthwhile estimating the composition of the alga remaining after feeding on other composite blocks.

Egg-laying was only observed by *L. variegata* and most were laid on foliose lichens (particularly *P. sulcata*) but also on the crustose lichen *Cliostomum griffithii*. Pearman noted that the eggs of *L. variegata* are each thickly covered with minute brown flakes of bark probably applied by means of an anal secretion (Pearman, 1928). On block Lv3 it was noted that some bare bark had been eaten, presumably for this purpose. If this covering of bark was to provide camouflage then it might have been expected that eggs would have been laid on bare bark but that wasn't observed during the study.

A single study of this kind is insufficient to prove that these observations represent genuine trends. Repeat studies are needed to either confirm the trends or show that other factors are operating and influencing the results. There are a range of possible factors that may need to be taken into account e.g.

- Individuals of a psocid species have different preferences;
- Species have different feeding preferences at different periods e.g. when egg-laying or when they first become adult;
- The age of a lichen/alga affects its palatability;
- Psocids from different geographical areas have different preferences.

The insect specimens only lived for a short time (1-7 days) during this initial study. This was probably due to dehydration and steps should be taken in any future studies to ensure that the atmosphere inside the Petri dishes is kept sufficiently humid.

Conclusions

The initial reason for carrying out the study was to find out whether *L. variegata* preferred to eat the crustose lichens that the Rosebery specimens had been resting on. *L. variegata* did not feed on any crustose lichens so it is very unlikely that this explains why the Rosebery trees were so favourable and another theory needs to be looked for. The study, however, did demonstrate that composite blocks of epiphyte covered bark can be used to determine which lichens/algae species different psocid species will feed on and to investigate the factors that may influence their preferences. Although not the intention of the study, the blocks were also found to be useful for demonstrating preferences for egg-laying on different substrates.

Acknowledgements

I am very grateful to Hans Sluiman and Brian Coppins for identifying the algae and lichens respectively used in this study. The work would not have been possible without their help. Photograph of *L. variegata* by David Jones.

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Cosmopterix zieglerella (Hb.) (Lep.: Cosmopterigidae) in Staffordshire: A new moth to the West Midlands area

While visiting my mother (mother not moth-er!) who lives on the edge of Cannock Chase in Staffordshire (VC 39) during early October 2009, we took a short walk up to The Chase on 1 October, a walk of about ten minutes from her house. To access this area we had to go by the edge of suburbia. While skirting a row of bungalows we noticed some hop amongst hedgerows next to one of the gardens in Brereton, Rugeley (O. S. grid reference SK 045168) which hosted several distinctive mines of *Cosmopterix zieglerella*.

We are informed by John Langmaid and Dave Emley that they represent the first record of this species both for VC39 and also for the West Midlands area.— JON & AD CLIFTON, Kestrel Cottage, Station Road, Hindolveston, Norfolk NR20 5DE (E-mail: jon.clifton@btinternet.com).

TWO CHANGES IN NOMENCLATURE WITHIN THE GENUS *ACROTRICHIS* MOTSCHULSKY (COL.: PTILIIDAE) FROM SRI LANKA AND PANAMA

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Abstract

Two new nomenclatural changes within the genus *Acrotrichis* (Coleoptera, Ptiliidae) are reported.

Keywords: Ptiliidae, SriLanka, Panama, *Acrotrichis*.

Ptiliidae

Whilst working on the family Ptiliidae for the new 'Palaearctic Catalogue' (Johnson, 2004), detailed checking of bibliographic sources and in particular the outdated world catalogue (Csiki, 1911) revealed many changes which were made in my catalogue. Two further changes are dealt with now.

Acrotrichis (Acrotrichis) fulvoides **nom.n.**
(= *Acrotrichis (Acrotrichis) fulva* Johnson, 1988: 270, not (Motschulsky, 1869: 180))

I described this new species as *Acrotrichis fulva* from Sri Lanka (Johnson, 1988: 270). Unfortunately, I was unaware at the time that the name *fulva* is a primary homonym of a 'New World' species described as *Acratrichis fulva* (Motschulsky, 1869) from Panama, then wrongly placed as a synonym of *Acrotrichis crotchii* (A. Matthews). A new name for the Sri Lankan species is therefore needed, and I propose *fulvoides*, meaning 'resembles'.

Acrotrichis (Acrotrichis) infuscata **(Motschulsky, 1869) stat.n.**
(*Acratrichis infuscata* Motschulsky, 1869: 179; = *Acratrichis fulva* Motschulsky, 1869: 180)

When I sorted out the identity of *Acrotrichis crotchii* (A. Matthews) as a synonym of the Canary Island endemic *A. wollastoni* (A. Matthews) (Johnson, 2001), this meant that reputed specimens from Panama and other parts of the neotropics required a different name. Although I have not examined any types of this species or its single synonym, it is appropriate to resurrect the name *infuscata* for it on nomenclatural grounds.

Acknowledgements

I am grateful to my friend Dr Alfred E. Newton, retired Staphylinoid curator at Field Museum of Natural History, Chicago, U.S.A. for helpful comments and providing a copy of Motschulsky's paper.

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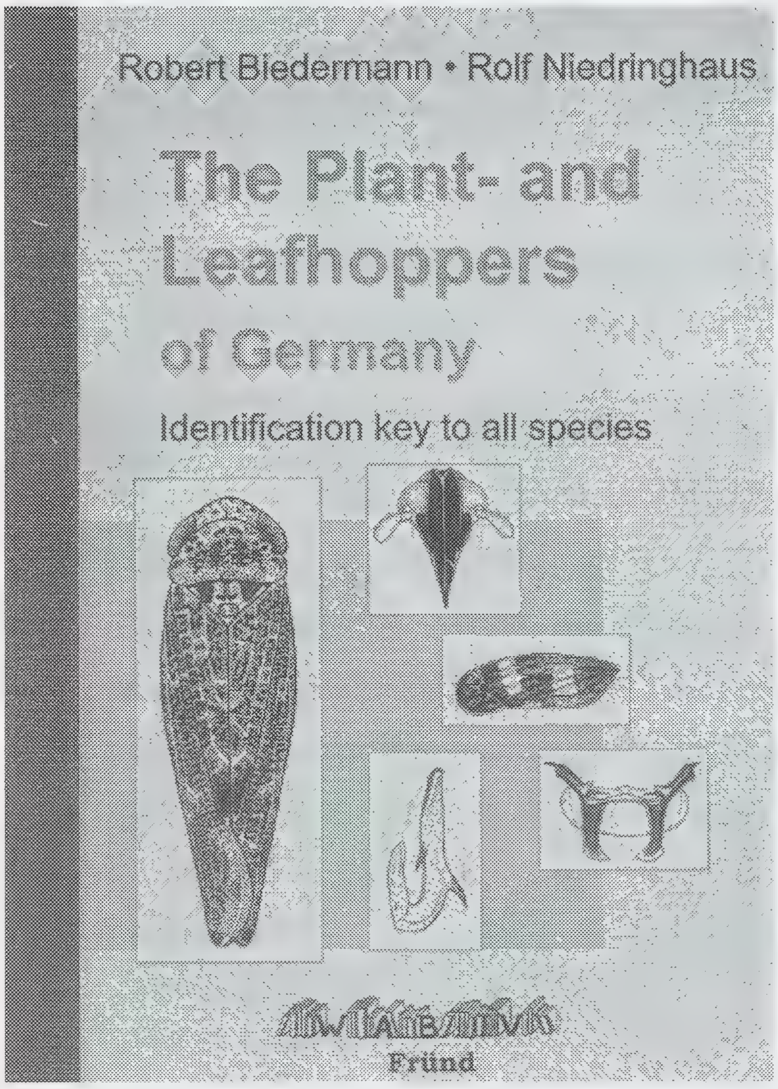
BOOK REVIEWS

The Plant- and Leafhoppers of Germany by **Robert Biedermann and Rolf Niedringhaus**. 409pp., approximately 4000 drawings. 303 x 204 mm, hardbound, ISBN: 978 3 00 023535 1. WABV, 2009. Available from the publisher: Wissenschaftlich Akademischer Buchvertrieb-Fründ, Westerwiesenweg 21, D-27383 Scheeßel, Germany. €98 plus carriage.


Robert Biedermann • Rolf Niedringhaus
The Plant- and Leafhoppers of Germany
Identification key to all species
WABV
Fründ

Don't be put off by the title of this magnificent tome – although it covers the German fauna, I am informed that only six British species within this grossly neglected yet hugely important group of insects are absent from this work; I venture to suggest that the inclusion of large numbers of non-British species will help, rather than hinder, the British entomologist. This is partly because no sensible keys to all the British froghoppers and allies are generally available, even if they do exist, and partly because this insect group is so hopelessly underworked that close study surely cannot help but add new species to the British fauna.

Of course, those of us who thought it would be a good idea to 'have a go' at this traditionally difficult group will have mixed feelings about this new volume. I for one am happy that a simple-to-use and copiously illustrated English language key is now finally available, if a tad expensive; I am less than pleased, however, at having shelled-out around a hundred notes for the German version (*Die Zikaden Deutschlands*) in 2004 only to discover the apparently well-kept secret of the English version now! Blame for this, however, is perhaps inappropriate, since in the Preface to the English version, the authors indicate clearly that the English language version was produced entirely in response to the demand for such a work.

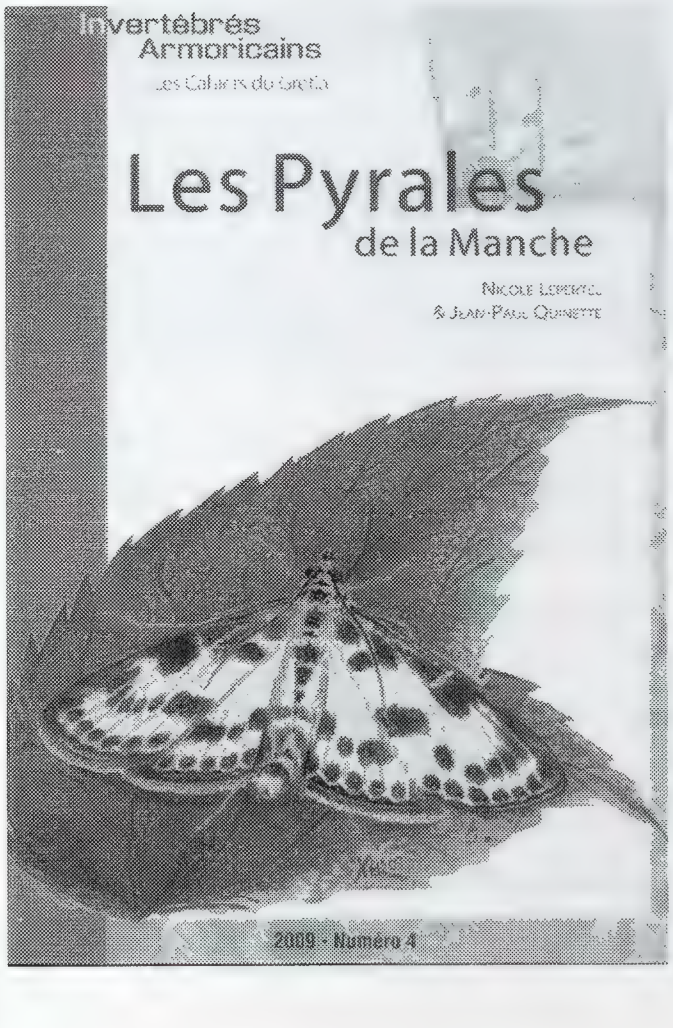
The English version is a direct translation of the German version (except for the end-papers, which depict a different hopper cartoon!). Brief introductory chapters and crucially important diagrams naming the various parts of hoppers precede 93 pages of clear, easily followed dichotomous keys to the 12 families and 223 genera. Almost all key couplets are accompanied by a line drawing of the feature referred to. The couplets and their drawings are on the left hand page of an open spread whilst on the right side are drawings of the whole insects.

Identification to species level is now treated in a novel manner. The following 241 pages present the 619 species in three columns, one species per column, divided into four lines. The top line shows a drawing of the adult, under which critical features such as size and distinguishing features are noted; where all species in a genus or group are identical to the naked eye only the first has a drawing, but all have the descriptive notes to guide separation. Line two draws the anal segment of the abdomen from the left, line three shows the aedeagus and line four provides the species name, a brief summary of its general habitat and the time of year when it may be found (presumably this latter will relate to Germany).

Most of the hoppers in my private collection are several years old and have been identified for me by Dr Peter Kirby, upon whose abilities I fully rely. Peter will doubtless be as pleased as the book's authors to learn that of the ten specimens/species that I specifically checked, all provided the same answer as that originally given by him!

I cannot recommend this book too highly to anyone who is considering the study of froghoppers and their kind with any degree of serious intent and it is worth noting that the authors hope to publish a guide to nymphal stages in 2010 and, hopefully soon afterwards, a colour photographic guide to the species.

Colin W. Plant



Les Pyrales de la Manche by **Nicole Lepertel & Jean-Paul Quinette.** Invertébrés Armoricains, les Cahiers du GRETIA, No. 4, ISSN: 1958-1793. 124pp., 210 × 297 mm (A4), paperback. Published 2009. €25.

This easy to use book covers the 121 species of Crambidae and Pyralidae known from the French department of La Manche – essentially the Brittany peninsula from Cherbourg in the north to Avranches in the south. This places it directly across the Channel from England and so knowledge of the fauna here will be of interest to British entomologists – especially those on the southern coastline of England.

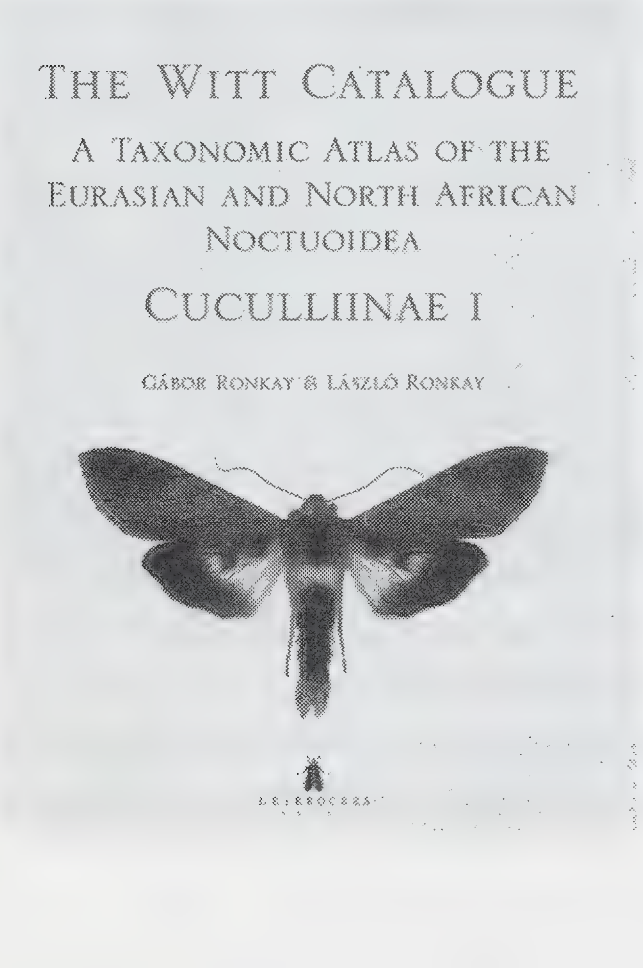
Colour photographs are presented for the species – first in life and then for most species as set specimens. In general, both sexes are shown where sexual differences are pronounced, although this good intention by the authors is not always adhered to. For example, the male of *Schoenobius gigantellus* (D.& S.) is shown, but not the female; the next page depicts only the female of *Donacaula forficella* (Thunb.), but not the male. In both these species the sexes have a quite different appearance, though in fairness the enormously different wingspan of each sex of *gigantellus* is specified separately. Distribution maps for each species recorded in La Manche are presented and a histogram indicates the flight period of the adult in that region. Larval foodplants are given, though these appear rather general and are perhaps culled from sources further afield than La Manche? Six species not yet recorded in the département, but likely to be found, are also depicted (*Trachycera suavella* (Zincken), *Thisanotia chrysonuchella* (Scop.), *Chrysocrambus craterella* (Scop.), *Udea lutealis* (Hb.), *Homoeosoma nebulella* (D.& S.) and *Phycitodes binaevella* (Hb.)).

A potentially useful innovation is the annotation of the species text with a pictogram indicating the ease with which each species might be recognised: a smiling face suggests an easily recognised species, a frowning face one that may require examination of the genitalia and an intermediate face, with mouth line horizontal, for species that can be easily confused with others. A further pictogram of a pencil indicates species for which a sketch of critical features is presented in a separate section of the book. All these useful features fully offset the slight disadvantage presented to some British readers by the fact that the text is in French and this latter fact should not deter people from buying a copy.

This is an excellent publication, disappointment arising only from the fact that many species have been illustrated by English specimens. As with so many groups, pyralids are best assaulted by beginners with more than one book, but this tome provides an extremely useful addition to the armoury. Since most of the included species also occur in Britain, it is a book that I heartily recommend to British readers.

Colin W. Plant

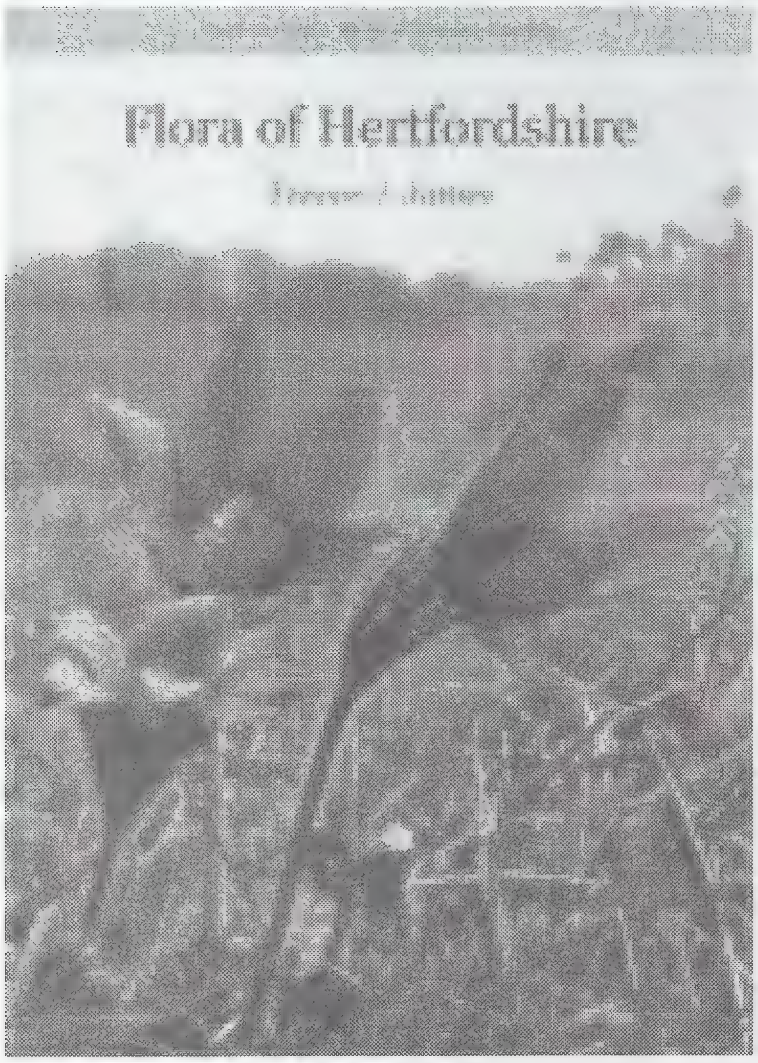
The Witt Catalogue. A taxonomic atlas of the Eurasian and North African Noctuoidea, Cuculliinae 1 by **Ronkay, G., & Ronkay, L.** 366 pp., 290 × 212 mm, hardbound, ISBN: 978 963 88014 0 1. Heterocera Press, Budapest, Hungary, 2009. €126. Details and sample pages from both volumes can be viewed at *www.heterocera.hu*, where direct orders may also be placed.


THE WITT CATALOGUE
A TAXONOMIC ATLAS OF THE EURASIAN AND NORTH AFRICAN NOCTUOIDEA
CUCULLIINAE I
GÁBOR RONKAY & LÁSZLÓ RONKAY

The series was introduced and the first volume (Plusiinae 1) reviewed in *Ent. Rec.* 121: 306-307. This second volume in what is *the* standard work on noctuids of this region covers the genera *Calocucullia* (one species – *celsiae* (H.- S.)) and *Cucullia* (125 species) – the latter being one that many entomologists find more difficult in terms of individual species separation. The text expands upon information supplied in volume 6 of the series *Noctuidae Europaeae*. Six new species and seven new subspecies are described; 15 former subspecies are shown to be no longer valid. Lectotypes are designated for 17 taxa. Large images (eight per page) are presented, in colour, for every species and then all species and subspecies are also shown in colour at life size. Male and female genitalia are shown. A superb volume that will be of crucial importance in future studies on the Noctuidae and which is worth every penny of its rather reasonable price. Buy now, to have a complete set of volumes, before the early ones go out of print.

Colin W. Plant

Flora of Hertfordshire by **Trevor J. James**, including numerous colour photographs by various photographers and line drawings by Andrew Harris. 518pp., 303 x 216 mm, hardbound with dust-jacket. ISBN: 978 0 9521685 8 4. Hertfordshire Natural History Society, 2009. £49.50. Available from the publisher at 24 Mandeville Rise, Welwyn Garden City, Herts AL8 7JU (E-mail: secretary@hnhs.org).



Why, I hear you ask, should a county flora warrant a review in an entomological journal? My justification is two-fold. First, whilst it may not be necessary for an entomologist to be intimate on a daily basis with the flora of his or her chosen 'patch' he or she will certainly require access to accurate information about it at some stage, since the vast bulk of insects, including most of the British Lepidoptera, feed on plants during their larval stage. My second justification is that whilst county floras are, like county faunas, of variable quality and readability, the reviewed example represents what one might hope other authors would aspire to produce for remaining counties.

Amongst the expected introductory chapters are two that stand out as especially valuable to entomologists – one on *The Changing Flora of Hertfordshire* and another on *Alien Plants in Hertfordshire*. These provide important background for the understanding of some changes to the moth and other insect fauna and ought to be read before the individual species accounts, so that individual situations can be interpreted in the context of a wider picture.

The species accounts are clear and useful, presented with tetrad distribution maps and often a colour photograph on well laid-out pages that are a pleasure to pore over. Especially useful to lepidopterists will be the increases or decreases noted for each plant species (expressed as a percentage); these may or may not concur with similar data on moth populations in the same geographical area; a detailed comparison to the two groups is now possible may well prove immensely useful to those concerned with moth conservation issues. Indeed, it is a great pity that this book did not appear *before* my own on moths of the same area – though that may well have doubled the production time. No matter – I now look forward to several winter evenings examining the distributions of foodplants of moth species that I regarded in my book as under-recorded, ready for targetted moth searching in 2010. Then there are the rare and declining species and those not yet recorded but whose foodplants are in fact present and so many, many more!

Outside Hertfordshire the appeal of this book to the entomological community might justifiably be regarded as limited but how wonderful it would be if other county botanical Recorders were equally productive.

Colin W. Plant

ALSO PUBLISHED ...

Tortricidae of the Palaearctic Region. volume 2: Cochylini by **Jósef Razowski**. Slamka (Bratislava), 2009. 200 pp., 8 colour plates of adults, numerous black and white photos and line drawings, including drawings of genitalia in 37 plates. 300 x 215 mm. Hardbound. Available from František Slamka, Račianska 61, SK-83102 Bratislava, Slovakia (E-mail: f.slamka@nextra.sk). €70 plus postage and packing.

This volume is entirely devoted to the tribe Cochylini. The general data on the family Tortricidae of the Palaearctic in a world context comprises volume one of this series and was reviewed in July 2008 (*Ent. Rec.* **120**: 159). This new volume includes the characteristics of Cochlini and the entries for the individual species. For each of the 349 species treated text covers synonymies, type localities, critical references, diagnosis and description, including genitalia and data on early stages, biology, habitats, food plants, distribution and zoogeographic affinities. Highly recommended for anyone working on the Tortricidae in Britain or elsewhere in Europe.

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THE MICHAEL MAJERUS FUND

A new Grant Scheme will be launched by the Amateur Entomologists' Society (AES) at its Members' Day on 24 April 2010. The Grant is named in memory of the late Professor Mike Majerus, AES President 2005-2009, whose effort and vitality in promoting the AES and encouraging young entomologists is formally acknowledged in the new Grant Scheme.

The purpose of the grant is to encourage active involvement in entomology and to engage a new generation of entomologists. It will support new projects which aim to advance amateur entomological study, research or education. It is anticipated that in most cases these projects will be based in the British Isles; projects involving the promotion of entomology amongst the young will be viewed particularly favourably. Further details will also become available over the coming months on the AES website at *www.amentsoc.org*.

For a project to be eligible for a grant from the Mike Majerus Fund, it must represent new activity; money will not normally be awarded for costs already incurred. Anyone may apply; non-members of the AES will, of course, be encouraged to join. Members of the AES Council are eligible to apply provided that the project is, demonstrably, not in any way related to their work as Trustees of the AES. Applications, which must be in writing, will be accepted at any time of the year and will normally be considered by the AES Grants Panel and recommendations made to the AES Council at the quarterly meeting immediately following receipt of the application. Applicants will be offered part, all or none of the amount requested, or a suitable alternative award, as appropriate. Awards may be conditional on, for example, the submission of a report on the project for which the grant is awarded; any conditions will be determined by Council in each individual case. It is intended that the first grant from the fund will be awarded during June 2010.

The AES Council's decision will be final and will normally be notified to the applicant within two weeks of the meeting at which the application is considered. Payment of the award will be made at the earliest suitable opportunity, subject to any conditions that Council may stipulate.

Initial funding of this Grant is with money donated in memory of Mike Majerus. As with all AES funds, public donations, directly or via legacies, are always welcome. Individuals and organisations wishing to donate to the Michael Majerus Fund are invited to contact the Treasurer of the Society in the first instance — AES Treasurer, PO Box 8774, London SW7 5ZG (e-mail: *treasurer@amentsoc.org*).

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The Editor welcomes contributions on British Isles Lepidoptera, on non-British Lepidoptera where likely to be of interest to British researchers and on other groups of British Insects for which specialist English language journals do not currently exist. We accept descriptions of new species. Other subject matter may be accepted entirely at the discretion of the Editor, whose decision is final.

Please follow the format in this issue. The Editor will be pleased to assist in any way possible, especially if you are a first-time author. If in doubt – contact me! Ideally material will be compatible with Microsoft Word and will arrive via e-mail, but we will accept typescripts or *neatly* hand-written contributions for shorter Notes.

Notes are reviewed and accepted by the Editor and are especially welcomed. We aim to publish these within two issues of acceptance.

Full papers must include an Abstract and a maximum of ten Key Words and acceptance is subject to external peer-review; full papers may be returned for changes before final acceptance and we aim to publish these within three or four issues of original receipt.

Colour or black and white photographs are welcomed but will only be used if they are deemed relevant by the Editor. All pictures, as well as graphs and other objects created in Excel or other programs must be sent as seperate files. This is because files embedded in Word documents cannot be edited.

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CELYPHA WOODIANA (BARRETT) (LEP.: TORTRICIDAE) – AN UPDATE

MARK PARSONS AND JAMES MCGILL

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Abstract

A survey for *Celypha woodiana*, coordinated by Butterfly Conservation, was undertaken during 2009, finding the species at new sites and providing additional insights into the ecology of the species as well as identifying some potential threats.

Keywords: *Cleypha woodiana*, Tortricidae.

Introduction

Parsons & McGill (2009) detailed the history, life cycle and habitat preferences of *Celypha woodiana* (Barrett), a UK Biodiversity Action Plan Priority moth species also known as the 'Mistletoe Marble'; the paper also included a map showing the species distribution in England and Wales. To summarise, this species is associated with Mistletoe *Viscum album* being predominantly found in orchards, but also occurs on grazing levels with a very few records from other habitats. It has a restricted distribution and is known from Somerset, Gloucestershire, Herefordshire, Worcestershire, Warwickshire and possibly Monmouthshire. Parsons & McGill (*op. cit.*) identified records for 14 10km squares from 2000 onwards and another 15 10km squares prior to that date.

During 2009, with contributory funding from the National Trust's *Conserving and Restoring Traditional Orchards in England* project, Butterfly Conservation co-ordinated a survey for this species. JM undertook much of the survey effort, concentrating on searching for the larval mine between February and May, with assistance from others, including MP.

Results

The main survey visited 34 sites covering the counties of Somerset (17 sites), Gloucestershire (seven sites), Herefordshire (seven sites), Monmouthshire (two sites) and Worcestershire (one site). Although these were mainly orchards, additional effort in June and July resulted in a few further sites in Somerset being surveyed, with vacated mines recorded as late as 31 July. Also a few other sites were reported by other individuals. Over the course of the season, evidence of the moth was found at 22 sites covering twelve 10-km squares (Table 1).

Discussion

Eighteen new sites for the species were found, although many of the sites surveyed did not support, or seem to support the moth. Also, disappointingly, at

Table 1. Results of the survey for *Celypha woodiana* in 2009.

County	**No. of sites* where *C. woodiana* was found**	**10km National Grid squares where *C. woodiana* was found**
Somerset	15	6
Gloucestershire	3	2
Herefordshire	3	3
Worcestershire	1	1
Total	**22**	**12**

* Definition of a site in this context may include a number of apparently isolated sub-sites on grazing levels where mines have been found.

least three former sites were surveyed with negative results. Of the twelve 10-km squares where the moth was recorded in 2009, six were new for the period from 2000 onwards (covering Ordnance Survey grid squares ST43, ST46, ST53, SO53, SO71 and SO84) with four of these being appearing to be a new 10-km square for the species. As a consequence of this survey and additional targeted effort, this moth is now known from 21 10-km squares in the period from 2000 onwards (including an additional record found since the publication of Parsons & McGill, 2003), of which 19 are based on larval or mine records and so are *breeding* records. However, there is anecdotal evidence to suggest that it is now less easily found at sites than during the 1980s (D. J. L Agassiz and M. Harper, pers. comm.)

Through visiting so many sites, the survey provided additional insights into the species' ecology. Of the sites found to support the moth in 2009, the majority were orchards, or orchard-like (such as a garden with an apple tree), although seven were grazing levels. This latter habitat is very clearly more important for the species, at least in Somerset, than was previously considered to be the case. Mines were typically only found at low density, although on four occasions ten or more mines (or vacated mines) were found. Interestingly, isolated hawthorn (*Crataegus monogyna*) on grazing levels with small amounts of Mistletoe often supported the greatest densities of mines.

A few mines on small Mistletoe leaves were spun to adjacent leaves where the larva fed, having exhausted its initial food supply. One adult was reared from such a situation to confirm the identification as *C. woodiana*. However, without the observation of a larva, or the trace of the characteristic crescent-shaped early mine and entrance hole, it is not safe to record this species. These feeding signs could easily be confused with spinnings made by other more polyphagous tortricids. Species reared from Mistletoe include *Ditula angustiorana* and *Epiphyas postvittana*.

The 2009 survey also provided further insights into potential management issues as well as individual site threats. Absence of the moth from potentially suitable sites can, perhaps, be explained by extensive Mistletoe cropping in the past, although this may not be so obvious if it did not happen recently as the Mistletoe will have recovered. Over-zealous and extensive clearance of Mistletoe should be avoided, with at least some stands of Mistletoe retained year on year. Completely neglected orchards with a limited number of healthy trees were observed to support the fewest mines or none at all, despite significant quantities of Mistletoe. In these situations planting of new potential host trees is needed to ensure the long term continuity of available habitat, before the existing tree stock becomes completely senescent.

If the moth is known to only exist at low density in an orchard, restoration work can also potentially be a threat. In these situations, if reducing the quantity of Mistletoe, it is probably better to retain fewer clumps of mistletoe on many trees, rather than have a small number of hosts which are heavily overloaded. Priority should be given to keeping the largest healthy clumps, particularly where partly exposed on the edge of the tree canopy. Individual trees supporting the moth and their nearest neighbours may also need to be identified and protected from any management.

To compound these threats the loss of orchards at the landscape scale makes it harder for the moth to recolonise sites following local extinction. Consequently, encouragement should be given to establishing new orchards, particularly in areas where the moth occurs, thereby expanding potential habitat.

As an example of a site specific issue encountered over the course of the survey, a car park was due to be developed at one site with the key trees potentially removed. The car park has gone ahead but, as a result of advice from Butterfly Conservation and National Trust staff, the trees have been retained and protected with additional planting secured to try to ensure a continuity of habitat for the future.

Conclusions

This survey demonstrates the ample possibility of locating new sites for *Celypha woodiana* and we would encourage further survey effort. The most efficient method is to search for larval mines, which are most obvious in May. Readers are reminded of the photographs in Parsons & McGill (2009) showing overwintering and later stage mines. A factsheet has also been produced by Butterfly Conservation, and this can be downloaded from the BC website at *www.butterfly-conservation.org*. If you are successful in locating *Celypha woodiana* we would, of course, be pleased to hear from you.

Acknowledgements

We would like to take this opportunity to thank the National Trust's *Conserving and Restoring Traditional Orchards in England* project with funding from Natural England for supporting this survey. Butterfly Conservation would like to thank Natural England for their continued support of the *Action for Threatened Moths* project. Additionally we would like to thank D. J. L. Agassiz, A. P. Foster (National Trust), D. Grundy, M. Harper, R. Hemming, R. Homan and A. N. B Simpson for their enthusiasm and help with this survey, and to the many site managers and land owners for allowing access to the sites.

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Devon Carpet *Lampropteryx otregiata* (Metcalfe) and Tree-lichen Beauty *Cryphia algae* (Fabr.): Two new macro moth species in Huntingdonshire (VC 31)

During 2008 Philip Horsnail moved into Huntingdonshire and started to operate a light trap near the village of Holme. Phil recently made contact with me via the web site of the Huntingdonsire Moth and Butterfly Group (*www.hmbg.org*) and sent me a copy of his moth records for 2008 and 2009. These included some interesting species that are scarce in the county such as Red-necked Footman *Atolmis rubricollis* (L.) and Ear Moth *Amphipoea oculea* (L.). However, both of these species are found regularly on Holme Fen, which is only one mile from where Phil operates his trap. Also in his list for 2008 was a record of Devon Carpet *Lampropteryx otregiata* (Metcalfe) which he caught on 4 June, a moth that has increased its range during the past few years. Phil retained the moth and took it to several people for confirmation, including Peter Sharpe who caught one in Northamptonshire on 29 August 2005 (John Ward pers. comm.).

On 23 August 2009 David Griffiths trapped a Tree-lichen Beauty *Cryphia algae* (Fabr.) in his garden trap in Earith. This is the first county record of this species. The moth is now in the County collection. — BARRY DICKERSON, 27 Andrew Road, Eynesbury, St Neots, Cambridgeshire PE19 2QE (Email: barry@eynesbury27.freeserve.co.uk).

Extreme mothing: Capture of three White-spotted Pinion moths *Cosmia diffinis* (L.) (Noctuidae) at light in Bedfordshire during four hours of pouring rain and other recent news of this UK Biodiversity Action Plan Priority Species

On 6 August 2009, fifteen of us drove through heavy rain to get to a *Butterfly Conservation* Moths Count workshop concentrating on the nationally rare, elm-dependent White-spotted Pinion moth *Cosmia diffinis*. This workshop was held at the RSPB Lodge, Sandy, Bedfordshire, with fieldwork near Potton. We set up two Robinson light-traps under elm trees, with the rain still pouring down. The night became prematurely dark by 20.30 hours owing to the rain clouds. Both traps were running by 21.00 hours, when we recorded the air temperature as 18°C. We protected the generator with a large golfing umbrella under which we also had the chokes, raised from the ground on a wood block and covered with a plastic washing up bowl! Despite the rain a few moths soon started to arrive at the traps, while we discussed the operation of light-traps, the reasons why moths come to traps, trap-designs, choosing trapping sites, and the habits of the White-spotted Pinion in relation to them. At 22.40 hours we had found both traps blank for the target species, and we were just putting the second trap back together when the first White-spotted Pinion of the night arrived at the light. By 23.00 hours, we had two more, all in the same trap, while the other trap, also by tall elms, caught none. With the rain still coming down, we decided to call a close to a very wet, but very successful night, released the moths, collected up the equipment and walked the gear back to our cars. We had also captured a combined total of five Lesser-spotted Pinion *C. affinis* (L.) between the two traps, which provided us with the opportunity to compare and contrast the differences in size, appearance and resting positions between these two species alive. In fact, we found three of the four British *Cosmia* species, because we also had ten of the widespread Dunbar *C. trapezina.* Only the Lunar-spotted Pinion *C. pyralina* (D.& S.) failed to show.

Perhaps surprisingly, we logged a total of fifty macro-moths of seventeen species, plus a few micros, at the two Robinson traps during the two hours they were operating in the pouring rain. The macros included, in order of abundance, ten Dingy Footman *Eilema griseola* (Hb.) five Lesser Broad-bordered Yellow Underwing *Noctua janthe* (Borkh.), three Flame Shoulder *Ochropleura plecta* (L.), two each of the Shuttle-shaped Dart *Agrotis puta* (Hb.) and Setaceous Hebrew Character *Xestia c-nigrum* (L.) and one each of the Mouse Moth *Amphipyra tragopoginis* (Cl.), Dark Arches *Apamea monoglypha* (Hufn.) and Grey/Dark Dagger agg. *Acronicta psi/tridens* as well as single individuals of the Pine Hawk-moth *Hyloicus pinastri* (L.) and the weaker-flying geometrids Small Phoenix *Ecliptopera silaceata*, (D.& S.), Garden Carpet *Xanthorhoe fluctuata* (L.) and Purple Bar *Cosmorhoe ocellata* (L.) in addition to the above three *Cosmia* species. We also recorded ten Mother of Pearl *Pleuroptya ruralis* (Scop.) (Crambidae). Ian Woiwod, recently retired from the Rothamsted Insect Survey, widely experienced with moth-traps over a long professional career and present in this group of drenched moth enthusiasts, described this exercise as the most extreme mothing he had ever done!

The Bedfordshire macro-moth recorders, Andy and Melissa Banthorpe, who were with us, decided to revisit the Carthagena Way site on 10 August 2008, to see if the White-spotted Pinion was surviving the continuing ravages of Dutch elm disease at this site, and they were also successful in finding the moth here; two individuals arrived at light at 21.28 and 22.28 hours, along with six Lesser-spotted Pinion. Whether all the tall elms at this site will be killed by the elm disease eventually, and whether the moth will be able to survive on lower elm re-growth, remains to be seen. Interestingly, John Day e-mailed me after our workshop to report a single, very worn White-spotted Pinion on the night of 9 August 2009 in the light-trap at his garden in Potton, which has no elm. It was two single individuals such as this, one on 2 August 2002 and one on 11 August 2003, which originally led to our discovery of the population on the nearby Carthagena Way, and he reports that he has not recorded any during the intervening years.

Additional news on the White-spotted Pinion includes a record of one individual each at two additional sites in Bedfordshire in 2009. These were at Cockayne Hatley by Ian Woiwod, on 11 August, where it was last seen in 1977 and at Manor Place, Upper Caldecote, by M. Burgess on 19 August, the first ever seen at this site (Andy and Melissa Banthorpe, pers. comm.). There were also further records from its known sites in Cambridgeshire, Huntingdonshire and Essex. I can also now add that a site in Worcestershire produced thirteen adult White-spotted Pinion in 2008, though an attempt to record more there on the night of 18 August 2009 produced none (Steve Whitehouse, pers. comm.). I consider this date was a little too late for reliable encounters with this species, although several Lesser-spotted Pinion were still on the wing. I feel confident the moth will be found there around 6-10 August in future years and that searches here and elsewhere in Worcestershire in 2010 would definitely be worthwhile.

In addition to all the above-named I would like to everyone else who attended the moth-trapping sessions described above; the John O'Gaunt golf course adjacent to the Carthagena Bridleway for their co-operation, and their groundsman Steve Thompson for joining us; land-owner Mr Brookman for providing us with ample car-parking along Sutton Mill Road and for his continuing interest in the moth; the RSPB for hosting the indoor portion of the event at The Lodge, and the BC Moths Count project for financial support for the leader/author and for providing numerous leaflets and other moth literature for the participants. — PAUL WARING, 1366 Lincoln Road, Werrington, Peterborough PE4 6LS (E-mail: paul_waring@btinternet.com).

GORGYRA STEWARTI SP. NOV. – A SURPRISING NEW SKIPPER BUTTERFLY FROM CAMEROUN AND THE DEMOCRATIC REPUBLIC OF CONGO (LEP.: HESPERIIDAE)

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Abstract

As part of preparatory work for a monograph on the skipper butterflies (Hesperiidae) of the Afrotropical Region a remarkably distinctive new species from Cameroun and the Democratic Republic of Congo was discovered and is here described as *Gorgyra stewarti* sp.nov. Its closest relative is *Gorgyra subflavidus* Holland, 1896 from the coastal forests of East Africa (Kenya and Tanzania), a distinct biogeographical subregion.

Key words: Afro-tropical Region, Africa, Cameroun, Democratic Republic of Congo, Lepidoptera, Hesperiidae, *Gorgyra stewarti* sp. nov.

Background

One of the pleasant hazards of screening butterfly collections that have not been subjected to expert scrutiny is that something quite unexpected might turn up. I have just commenced the advance studies for a definitive book on the skipper butterflies of tropical Africa (some 550 species with a further 200 subspecies have already been described) so I was pleased to take up an invitation to check the collection of James Stewart in Cheltenham, UK, with whom I had been in correspondence.

The Stewart collection turned out to be large, beautifully curated and in most cases well identified. The material stemmed from Stewart's own collecting in Kenya and Uganda, exchanges with other collectors, and more recently purchases from commercial collecting teams in Cameroun and the Central African Republic. Half way through the collection a small species of *Gorgyra* attracted my attention – even before I noticed that it already carried a question mark rather than a positive identification. I turned it over to see a bright yellow, almost unmarked hind wing underside that I had never before seen in *Gorgyra*. It took me just a minute to be satisfied that it was indeed an undescribed species.

The Hesperiidae of Africa have not been systematically reviewed since the famous monograph by Brigadier W. H. Evans (1937) and subsequently have had a step-motherly treatment compared to the rapid progress in our knowledge of other African butterflies. *Gorgyra* is a complex genus with about 20 described species, many so similar that dissection to see the male genitalia is necessary to be sure of the determination; since 1967 I have dissected several hundred *Gorgyra* to be sure of their identity. Here was a new species so obvious that I could be sure on the spot.

Gorgyra stewarti sp. nov.

Holotype: ♀ Cameroun, Ebogo, ii.2007. Plate 7. Type depository: African Butterfly Research Institute (ABRI), Nairobi – ex coll J. Stewart.

Paratype: ♀ North Kivu Province (Mt Atonzo), Democratic Republic of Congo, i.1991 (coll. R. Ducarme).

Diagnosis: Forewing 15 mm. The species comes closest to *G. subflavidus*, the only somewhat similar species among the 20 or so known members of the genus. The female holotype has a small, but distinct, upper cell spot and vestiges of a lower cell spot (*G. subflavidus* has a better marked lower cell-spot and a vestigial upper spot). The lower spot is absent in the paratype. There are tiny subapical spots in spaces 6 and 8, the latter being almost invisible. The spots in 1b, 2, and 3 are well developed though smaller than in *G. subflavidus*. The hindwing has elongated hyaline spots in spaces 2 and 3, separated by black along vein 3. Cilia beige with only a hint of black at the end of the veins. The forewing below has ochreous scaling along the costa to the cell-spots as well as in the subapical area and more faintly along the margin. The hindwing below is almost wholly clear yellow, reminiscent of *Ceratrichia phocion* Fabricius, 1781 but rather more subdued, while that of *G. subflavidus* is a creamy ochreous with more extensive dark markings. There is a small black spot at the end of the cell and some tiny black discal and submarginal marks in 1c. The hyaline spots of the upperside hardly show through, as they do in *G. subflavidus*. The hindwing has a very fine and precise black margin. The hindwing cilia is yellow, faintly darker at the end of the veins, instead of chequered as in *G. subflavidus*. The paratype has a few additional black spots and some diffuse dark submarginal lunules. The abdomen is black, but each distal segment is finely annulated by white; the underside of the abdomen is light beige.

Etymology. This species named in honour of James Stewart, who has allowed me to dissect material from his collection as my studies evolve.

Discussion

G. stewarti is clearly closest to *G. subflavidus* (Holland, 1896), a decidedly scarce butterfly that is only found in the coastal forests of Kenya, eastern Tanzania, and northeastern Mozambique. However, *G. stewarti* cannot be confused with this or any other skipper. I would normally not describe a new species of *Gorgyra* on the basis of a single female, but in this case there can be no doubt. The coastal forests of East Africa form a completely distinct biogeographical region; only a few of the many species of the main forest zone are found there and most of the coastal dedicated forest species are endemic.

The holotype is a female in good condition, captured at Ebogo, on the Nyong River south of Yaoundé in Cameroun and was included in a large shipment of butterflies from commercial collectors. This locality has been the subject of intensive collecting and much material from there is also in the African Butterfly

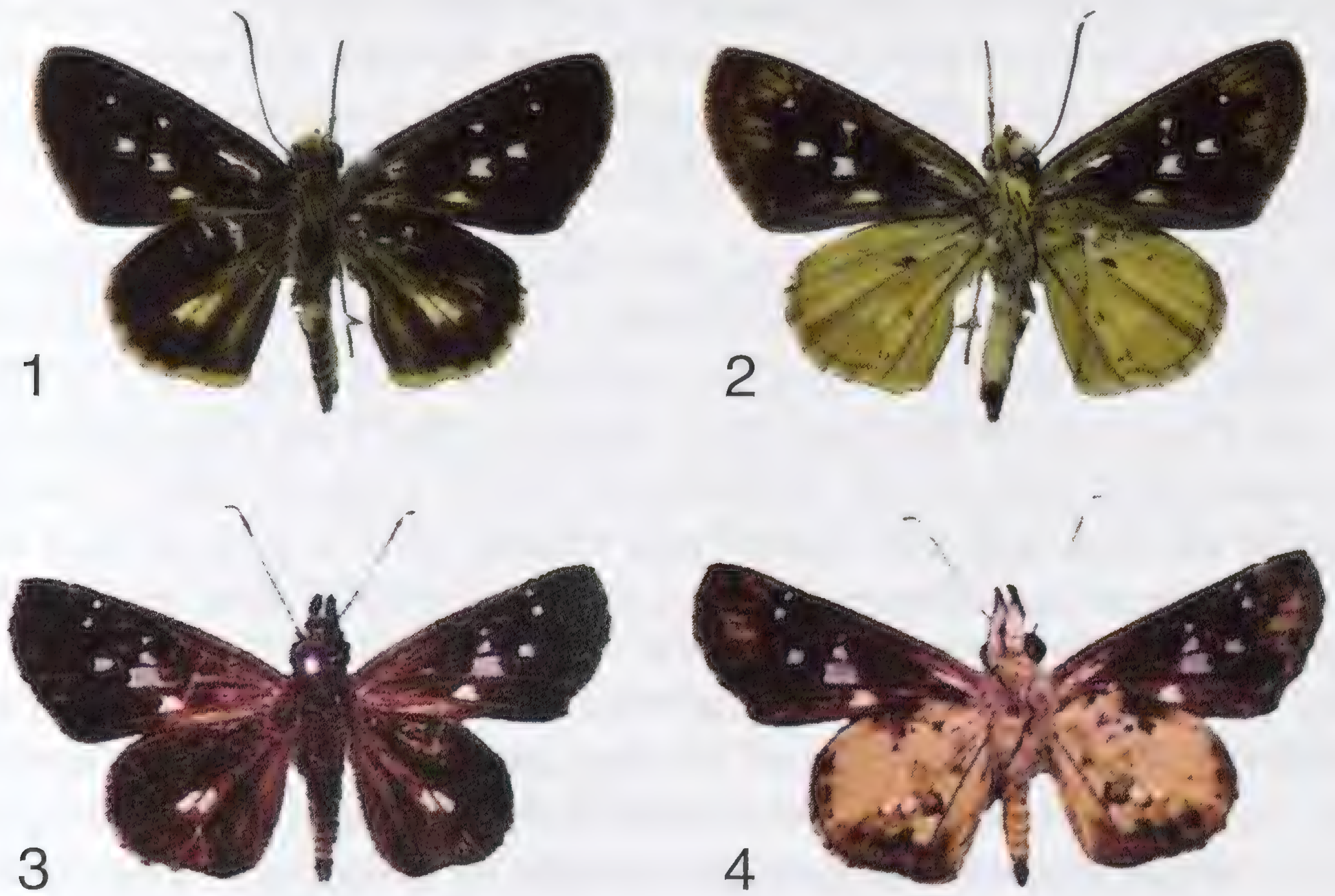

Plate 7. *Gorgyra* species. 1 & 2: *Gorgyra stewarti* sp. nov. ♀ Holotype (1: upper side; 2: lower side); 3 & 4: *Gorgyra subflavidus* ♂ (3: upper side; 4: lower side). Sexual dimorphism in *Gorgyra* is very slight.

Research Institute (ABRI), Nairobi collection, but this species is not there. The team at Ebogo is unusually good at collecting Hesperiidae, having taken series of many species known from just the type or a handful of specimens, and even some species new to science. *G. stewarti* thus appears to be genuinely scarce.

I sent photographs to Steve Collins at (ABRI), Nairobi to double-check that no additional specimens were there. The answer was no, as well as agreement that it was definitely a new species.

Shortly after this Steve Collins unexpectedly turned up at the Royal Africa Museum in Tervuren; he knew I was doing research there at the time and happened to be passing Bruxelles. The previous day he had visited Robert Ducarme, who works in the Kivu Province of the Democratic Republic of Congo, and collects butterflies. Steve took out his small camera and showed me some interesting new specimens from Ducarme's collection. One was an evident new species of *Chondrolepis*, an afro-montane skipper genus where identification is often difficult. 'But look at this' he said. A female *Gorgyra stewarti* appeared on the camera screen, very similar to the type! The odds against finding a single female of a distinctive new, rare species from Cameroun, and then another specimen from Kivu two months later must be almost astronomical – but a welcome corroboration. The Cameroun type locality and Kivu are about 2,000 km apart; Kivu is about 1,000 km from the nearest localities of *G. subflavidus*. Whether or not the populations in Cameroun and in Kivu are genuinely disjunct or the species will be found in other localities in between remains to be seen; both possibilities are biogeographically plausible. The fact that the underside of the Kivu specimen has more dark markings perhaps points to a genuine disjunction – perhaps even to a distinct subspecies. This must await further material of both sexes from both areas.

In this respect it is worth mentioning that Ducarme also collected a single male of the very distinctive *Fresna maesseni* Miller, 1971 in Kivu. This was described from Ghana's Volta Region since when a few more have been found in Ghana proper and Côte d'Ivoire. Recently ABRI received a few from Cameroun, one of which came from Ebogo, the type locality of *G. stewarti*. The Cameroun specimens are identical with those from Ghana. This is a larger and more distinctive skipper that, though rare, is less likely to have been overlooked; I suspect its distribution is genuinely disjunct.

When the African volume of 'Seitz' was published (Aurivillius, 1925), it recognized just over 2,000 species of Afrotropical butterflies. This had increased to 2,600 when Peters (1952) published his checklist. Carcasson (1964) estimated a total of 2,700 and began a systematic compilation for a catalogue, which reached 3,200 species (Carcasson, 1981). Carcasson's draft catalogue was eventually published by Ackery *et al.* (1995) with a total of 3,600. My present estimated total of valid Afrotropical species is about 4,100. Many more remain undescribed, but it is now quite rare to find a new species that can be recognized as such at a glance as was the case with *G. stewarti.*

Acknowledgements

Thanks to James Stewart for letting me describe this new species and for placing the type in the African Butterfly Research Institute (ABRI). Thanks also to Robert Ducarme and Steve C. Collins for drawing attention to the paratype. Eddie John kindly proof-read the manuscript. I am grateful to the Carlsberg Foundation for just renewing the grant that is essential for a flexible approach to my continued African butterfly research.

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Cosmopterix zieglerella (Hb.) (Lep.: Cosmopterigidae) in east Berkshire, an update

Recently I reported finding *Cosmopterix zieglerella* (Hb.) mining hop *Humulus lupulus* leaves at Davis Street and Dinton Pastures (Hurst) and Sindelsham Mill (all localities in east Berkshire) in 2008 (*Ent. Rec.* **121**: 157). During 2009, I returned to these sites, in season, to monitor the progress of these colonies. On 1 September I counted over 200 mines in a 10 metre length of hop-clad hedgerow at Davis Street, where there was around 50 metres of hedgerow so affected. At the Dinton Pastures site three days later I counted over 50 mines in a stand of hop covered hedge near a bridge over a stream. The following week 25 mines were counted at the Sindlesham Mill site.

Searching further afield, I found mined hop leaves with the characteristic workings of *C. zieglerella* on the banks of the River Lodden at Twyford (8 affected leaves) on 16 September, and in hop growing over a hedgerow along the B3034 road east of Binfield I noted five mines on 20 September.

This is clear evidence of the continued presence of this moth in east Berkshire. Clearly it is successfully reproducing, with three known colonies having grown in strength dramatically since 2008. It will be interesting to see how it fares in this region over the coming years. — Ian Sims, 2 The Delph, Lower Earley, Reading, Berkshire. RG6 3AN.

Volucella zonaria (Poda) (Dip.: Syrphidae) in Northamptonshire

On 12 July 2009, whilst walking down the garden to examine the mv moth trap at 06.10 hours, I was 'buzzed' by what I thought, initially, was a hornet *Vespa crabro* L. The insect landed on the leaf of an adjacent apple tree and proceeded to bask in the early morning sunshine; closer examination of the stationary beast revealed it to be a female of the hoverfly *Volucella zonaria*. According to Stubbs and Falk (1983. *British Hoverflies: An illustrated identification guide*. BENHS), this striking insect did not become established in Britain unto the 1940s and is more frequently found on the southern coastline. The most up to date published information appears to be that of Ball & Morris (2000. *Provisional Atlas of British Hoverflies (Diptera: Syrphidae)*. NERC/Biological Records Centre). This shows records very firmly focussed upon the Thames Estuary, including into Central London, with other records scattered along the south coast from East Kent to West Cornwall and with outliers in the Bristol area. This species is, of course, a known immigrant and it is also the case that most immigrant examples may be females. Nevertheless, this present record from Northamptonshire appears to be significantly north of the known range in Britain and so worthy of recording here. — K. F. Williams, Arcanum House, 45 Braunston Road, Daventry, Northamptonshire NN11 9BY.

Northern Rustic *Standfussiana lucernea* (L.) (Lep.: Noctuidae): new to Suffolk

My moth traps were set on the evening of 6 August 2009 on the Bawdsey Manor Estate, Suffolk, (O. S. grid reference TM 337379, Vice-county 25) with eager anticipation as the conditions had been very favourable during this first week of August and the winds were forecast south-easterly from the near-continent overnight. The following morning my attention was drawn to an interesting looking grey noctuid in one of my Robinson traps. As I secured the moth, I tentatively identified it as Northern Rustic *Standfussiana lucernea*, a species I was familiar with having taken it in previous years at Hartland Point, North Devon. The pot containing the moth was put into my bag as I continued going through the traps. Other noctuid moths of note trapped included 18 specimens of Dark Sword-grass *Agrotis ipsilon* (Hufn.) and singles of both Langmaid's Yellow Underwing *Noctua janthina* (D. & S.) and Tree-lichen Beauty *Cryphia algae* (Fabr.). However, it was the *Ethmia quadrilella* (Goeze) (Ethmiidae) and Scalloped Hook-tip (L.) (Drepanidae) that I was more interested in, as both of these were new site records.

Whilst having my breakfast back home, I consulted Skinner (2009. *Colour Identification Guide to Moths of the British Isles. 3rd revised edition.* Apollo Books) to confirm my suspicions that my moth was indeed Northern Rustic. On reading the text, it was clear that the moth occurs at Folkestone Warren, East Kent, although it is absent from the eastern coast of England. This meant that the Bawdsey *lucernea* was not only new to Suffolk, but new to the east coast of England. The specimen was exhibited at the Annual Exhibition of the British Entomological & Natural History Society in London on 7 November 2009 and is reproduced now, photographically (**Plate 8**).

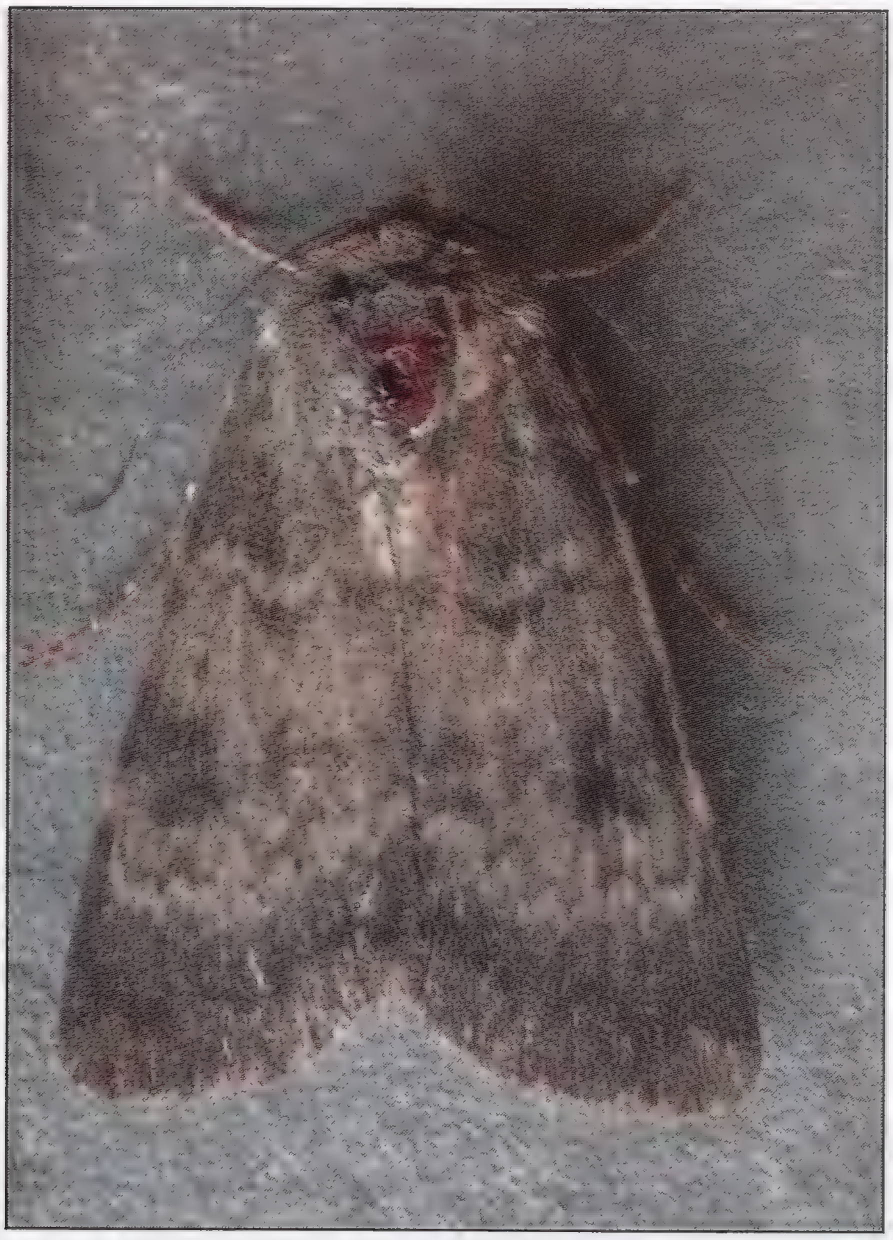

Plate 8. *Standfussiana lucernea* (L.), Bawdsey Manor Estate, Suffolk, 6.viii.2009, leg. M. J. Deans.

I suspect that the moth was an immigrant from the near-continent rather than a wanderer from the Folkestone Warren population. With the wind conditions at the time and the other migrants noted the same night that would seem most probable. — Matthew J. Deans, 49C Oak Hill, Hollesley, Woodbridge, Suffolk, IP12 3JY.

PERCHING AND PATROLLING CONTINUUM AT FAVOURED HILLTOP SITES ON A RIDGE: A MATE LOCATION STRATEGY BY THE PURPLE EMPEROR BUTTERFLY *APATURA IRIS*

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Abstract

One of the mate location strategies of the Purple Emperor butterfly *Apatura iris* Linnaeus includes the daily aggregation of males at favoured landmark sites from approximately midday.

The flight behaviour of male *A. iris* was studied at two sites supporting daily aggregations of males, along a ridge in a predominately broadleaved woodland during the flight period in 2007 & 2008. Flight behaviour consisted mainly of conspecific and patrol flights within the continuum from perching to patrolling. Thirty-nine percent of the observed flights were timed and the mean duration used to provide an approximation of activity. Male–male encounters in conspecific flights lasted longer with a mean of 54.07 seconds, but were less frequent than patrol flights, which had a mean duration of 14.87 seconds without encounters. Rain and overcast skies reduced activity whereas wind and temperature alone had less effect.

Keywords: Lepidoptera, Purple Emperor, *Apatura iris*, hill-topping, mate location, England.

Introduction

The Purple Emperor butterfly *Apatura iris* occurs at low densities over large areas of central southern England usually but not exclusively frequenting large broadleaf woods containing Goat Willow or Great Sallow *Salix caprea* on which most of the eggs are laid and larvae over winter (Asher *et al.*, 2001). In England *A. iris* is single brooded with adults flying from late June until mid-August (Asher *et al.*, 2001). It is well known that males in certain landscapes show a marked preference for some sites with a focal tree (Thomas & Lewington, 1991). Males visit these sites daily, high up on prominent trees usually from around noon until late afternoon (Thomas & Lewington, 1991). Scott (1974) observed some male butterflies can shift between perching and patrolling strategies during mate location behaviour. In the present study male *A.iris* shifted from a perching to a patrolling mate location strategy and vice versa within a continuum. To confirm and extend knowledge of the mating strategy of the Purple Emperor butterfly, the opportunity was taken to study the behaviour of males at two sites.

Methods

The mating strategies of the Purple Emperor butterfly are imperfectly known but frequently include the aggregation of males at favoured sites which may be used for several years. Watches in the principle of the 'focal animal follows' of Altmann (1974) were made at two of these sites in 2007 and 2008 and the flight behaviour of adult male Purple Emperor butterflies recorded.

The study area

The village of Bucks Horn Oak is central on a ridge in Hampshire, extending through Alice Holt forest (850 hectares) in South East England, along which several of these favoured sites may be found. This ridge is very nearly four kilometres long and lies approximately NNW between 115 and 125 meters above mean sea level. The Oak site consisting of a focal tree, a mature English Oak *Quercus robur*, with other *Q. robur* and Beech trees *Fagus sylvatica* is 0.34 ha. and borders an open area with Bracken *Pteridium aquilinum*. The Beech site consists of a focal tree, a Beech *F. sylvatica*, with other *F. sylvatica* and English Oak trees *Q. robur* in a semi open area of 0.2 ha.

Observations

The first day males visited the sites and the probable start of the flight season during the period of study, was determined from consecutive daily visits, when males were considered absent. The flight season started if males were then seen the following day. Observations were made at both sites for just under six weeks from the first day a Purple Emperor was seen at the start of the flight season in June. The shade temperature at ground level on site was measured and general weather conditions noted at the beginning of each watch. Watches on average were made between mid-day and late afternoon for 1.5 hours. Wind speed data were obtained from the meteorological station at Odiham.

The behaviour of *A. iris* within the continuum perching to patrolling (Scott, 1974) on site was observed with binoculars (Zeiss 10 x 40B Dialyt) during focal watches that started from the first sighting of *A. iris* either perched or flying. *A. iris* rarely descended lower than 12 metres, usually perching amongst the tips of the topmost branches and almost invariably facing south or south east (Frohawk, 1924). Males were never seen on the ground at the sites but were seen away from the hilltop sites, both on the ground and flying.

The interval between perching and alighting was measured to the nearest second using a stop watch with a digital display. It is unlikely many *A. iris* flew at the sites without being seen but only 39% of the flights were timed, mostly owing to the difficulty of seeing exactly where a butterfly perched. If it was impossible to keep a butterfly in constant view or it was first seen flying, the observation was recorded and noted as not timed. The duration of these flights was estimated later.

Most flights by males were recorded as one of two kinds. Conspecific flights on the one hand, consisting of flights with encounters with male *A. iris*, and on the other, shorter solo or patrol flights without encounters. In both years of study and at all sites, the duration of conspecific flights was greater than the more frequent patrol flights. A conspecific flight was defined as one leading to an encounter with another male. Most conspecific flights were in response to a male in flight by a perching male (Scott, 1974). A patrol flight was defined as one by a perched male but not in response to a known moving visual stimulus and without an encounter with another *A. iris*. A few initially patrol flights led to encounters with male *A. iris*, and were recorded as conspecific flights. Adult Purple Hairstreak *Quercusia quercus* butterflies were identified with the aid of a telescope and subsequently recorded as such from wing shape, size and flight. A small number of interspecific flights were made in response to *Q. quercus*.

Results

Observations

The earliest time a watch started (ie) when a male was first seen was at 12.06 BST, 41 minutes after the earliest observations began. In total watches were made at the Oak site and the Beech site for 56 hours 31 minutes and 16 hours 51 minutes respectively. A total of 1674 flights were recorded of which 659 were timed. Activity was defined as the period when male Purple Emperor butterflies were flying. On three days after daily aggregations by *A. iris* males were occurring regularly at both sites, one site was used but not the other. A conspecific flight usually consisted of two males, less frequently three or four. Occasionally two males would return from conspecific flights and remain perched between approximately 0.9 and 4.6 meters apart. There were 23 interspecific flights with Purple Hairstreak *Q. quercus* butterflies. One of the conspecific flights included an interspecific flight with *Q. quercus*. Twelve flights were in response to the following flying birds; Woodpigeon *Columba palumbus*, Swallow *Hirundo rustica,* Chaffinch *Fringilla coelebs* and Carrion Crow *Corvus corone.*

Two male *A. iris* were seen together for one afternoon only, on *Q. robur* in a flat area of the forest some distance from the Oak and Beech sites.

Weather

Four male *A. iris* stopped engaging in flights at the Oak site when it rained but resumed flying when it stopped. One of the four males was kept under observation and remained perched with closed wings during the heavy shower, lasting 23 minutes, when there was 100% cloud and the temperature was 17°C. The other three males probably perched out of sight. Fourteen minutes after the rain stopped the perched male opened its wings and flew after 20 minutes, engaging in encounters with three males as the sky lightened. On another occasion a previously active male *A. iris* remained perched during 40 minutes of total cloud cover when the temperature was 17°C but was active when the clouds dispersed.

The highest and lowest recorded temperatures during the watches were 26°C and 14°C respectively. Male–male encounters by *A. iris* were seen on both days when these temperatures were recorded.

Favoured sites on hilltops and high points on ridges in mature broadleaf woodland are often exposed to the prevailing wind. Males on several occasions were observed at both the Oak and the Beech site clinging to perches in the wind. For example on the 6 July 2007 at the Oak site, when a wind speed of 36 knots was recorded at the meteorological station at Odiham, four *A. iris* were engaging in patrol and conspecific flights. When alighting, these butterflies perched on the swaying upper branches of trees from which, during the watch, small twigs and green leaves were detached by the wind. This behaviour was also observed on 22, 27, 28 & 29 June 2007, when wind speeds between 25-30 knots were recorded and on 2, 4, 13, 20 & 27 July when wind speeds between 25-33 knots were recorded. Similar behaviour was observed in 2008, when on 7 & 24 July and 1 August wind speeds of 31, 29, and 30 knots were recorded respectively. The flight of males was relatively unaffected by these strong winds and male *A. iris* were observed to glide into the wind offering little resistance to it. Lower sheltered perches at the favoured sites were not used at this time and the preference for perches in the topmost branches maintained.

Male *A. iris* Activity

Patrol flights were 1.9 times more frequent than conspecific flights at the Oak site in 2007 and 4.3 times more frequent in 2008. Similarly patrol flights were 8.3 times more frequent than conspecific flights at the Beech site in 2007 and 18.8 times more frequent in 2008.

Fifty five conspecific flights were timed at the Oak site in the period of study. Similarly 270 patrol flights were timed. Additional conspecific and patrol flights were recorded at the Oak site but were impossible to time, usually because the butterflies disappeared from view and most likely perched out of sight. The duration of the 238 conspecific and 512 patrol flights that could not be timed were extrapolated from the mean of the 325 flights that were timed, to give a crude estimate of the total activity during the watches each year.

Interspecific flights with *Q. quercus* were excluded from this figure as were encounters with birds. The mean ratio of conspecific to patrol flights throughout the study at both sites was 1: 4.925 ± 0.195.

The Oak Site

In the first year of study males were first seen and thought to have emerged on 20 June. Males were present on all 19 subsequent visits during the 39 day period of watches of *A. iris* including the last visit on 28 July. The maximum seen concurrently was four males on four days, with three seen on seven other days in the flight period during watches totalling 29 hours 59 minutes. In 2004, five male *A. iris* were seen at the same time at this site.

In the second year of study six visits, totalling five hours 31 minutes, were made in the nine days before *A. iris* was first seen on 25 June. Male Purple Emperor *A. iris* were not seen on two of the 24 visits made during the 38 day period of watches, totalling 26 hours 32 minutes. Fewer male *A. iris* were seen at the same time in the second year of study with three seen together on four days. Males were only seen to perch twice on the focal tree. Only one female *A. iris* was seen.

Activity

The mean of timed conspecific flights in the first year was 50.32 ± 13.87 *s. p* = 0.05 (n=25 standard deviation = 6.73) and the mean of timed patrol flights was 15.85 ± 2.05 *s. p* = 0.05 (n=128 standard deviation = 1.05). Conspecific flights lasted significantly longer than patrol flights (t = 6.68, *151 d.f., P<0.001*). It was estimated from the total number of 563 flights (153 timed + 410 not timed) at the Oak site that male Purple Emperor butterflies were active for 14.56 % of the period of watches.

The mean of timed conspecific flights in the second year was 57.20 ± 9.90 *s. p* = 0.05 (n=30 standard deviation = 4.83) and the mean of timed patrol flights was 13.99 ± 1.82 *s. p* = 0.05 (n=142 standard deviation = 0.93). Conspecific flights lasted significantly longer than patrol flights (t = 8.93, *170 d.f., P<0.001*). Male *A. iris* were active for 11.84 % of the period of watches.

Flights

Altogether 270 patrol and 55 conspecific flights by *A. iris* were timed and a further 512 patrol and 238 conspecific flights recorded.

It was estimated from the total number of 1075 flights (325 timed + 750 not timed) in both years of study that male Purple Emperor butterflies were active for 13.28% of all watches. In 2007 males were flying for 10 seconds in every 68 seconds of a watch and for 10 seconds in every 84 seconds of a watch in the second year.

The Beech Site

In the first year of study watches totalling 9 hours 51 minutes were made. Three male *A. iris* were the most seen concurrently on nine of the 15 visits when more than one male was seen.

In the second year the most seen concurrently during 16 visits, when watches totalled seven hours, was two on six days. Only one female *A. iris* was seen, although another was seen on 6 July 2004.

Activity

The mean of timed conspecific flights in the first year was 62.25 ± 24.55 *s. p* = 0.05 (n=4 standard deviation = 7.71) and the mean of timed patrol flights was 22.47 ± 4.77 *s. p* = 0.05 (n=165 standard deviation = 2.43). Male *A. iris* were active for an estimated 19.74 % of the period of watches.

The mean of timed conspecific flights in the second year was 42.50 ± 19.07 *s. p* = 0.05 (n=10 standard deviation = 8.0) and the mean of timed patrol flights was 11.22 ± 1.70 *s. p* = 0.05 (n=155 standard deviation = 0.87). Male *A. iris* were active for 17.12 % of the period of watches.

Flights

It was estimated from the total number of 599 flights (334 timed + 265 not timed) at the Beech site in both years of study that male Purple Emperor butterflies were active for 18.64 % of all watches. They flew for 10 seconds in every 50 seconds of a watch in the first year and for 10 seconds in every 58 seconds of a watch in the second year. Altogether 320 patrol and 14 conspecific flights by *A. iris* were timed. A further 234 patrol and 31 conspecific flights were recorded. The number of conspecific flights timed was insufficient to compare with the number of patrol flights timed.

Discussion

Weather

The weather appears to affect the activity of male *A. iris*. For example in this study males ceased flying when it rained. Also if the sky was totally overcast males were less active and remained settled for long periods. Wind had little effect on the activity of male *A. iris* and did not appear to alter their preferred choice of exposed perches from amongst the topmost branches to, the less exposed upper branches or the more sheltered lower branches. Temperature alone as recorded in the study did not seem to affect the behaviour of the Purple Emperor butterfly.

Male *A. iris* Activity

At present in England the Purple Emperor is difficult to see, unless the location of a favoured site is known, being widely dispersed and occurring at low densities (Asher *et al*., 2001). This situation is likely to favour mate location at encounter sites at landmarks like prominent trees on hilltops (Thornhill & Alcock, 1983) as observed on the ridge in this study. Features common to both sites studied were prominent landmarks standing above the surrounding tree canopy and an open space or clearing in an otherwise closed broadleaf woodland canopy. Male butterflies using visual cues may identify or locate places such as landmarks or hilltops where females appear (Dennis & Shreeve, 1988). Based on Rutowski's studies on the visual ecology of adult butterflies (Rutowski, 2003) a focal tree at such a locality is unlikely to be resolved, allowing for the probable visual acuity of *A. iris,* until an approaching male or female *A. iris* is within 20-30 meters of it. Male *A. iris* emerge before females and aggregate at favoured sites in response to visual cues that reduces the area in which they perch. This aggregation of male *A. iris* resulted in much agonistic behaviour as males, sometimes three altogether, engaged in species recognition phases of flights (Andersson, 1994) and chases in a constant quest for females.

Frohawk (1924) noted male *A. iris* preferred a particular perch and remarkably during each year of the present study the same perches, within the reduced area, including apical shoots, were used by *A. iris* including other previously unused perches. Males rarely perched on the prominent focal tree at either site. Perching male *A. iris* almost invariably faced the open space in front of them, at the very tip of a leaf or shoot in the upper or topmost perches in trees allowing an almost unobstructed view of the sky. This characteristic orientation by perched *A. iris* would favour the rapid recognition of a possible conspecific, usually another male silhouetted against the sky (Rutowski, 2003), if it approached to within less than a few meters (Rutowski, 2003). The dorsal surface of male *A. iris* wings is highly visible and lies largely outside the visible spectrum (Silberglied, 1984). This highly visible purple is a result of refraction (Thomas & Lewington, 1991). Vegetation absorbs ultra violet light so perched male *A. iris* with open wings are likely to be highly visible (Silberglied, 1984) to female *A. iris* visiting hilltops as observed in this study. However Silberglied (1984) recognised brilliant colouration between males, as in the spectacular species recognition flights by *A. iris* in this study, as central to intrasexual communication between males. The orientation adopted by perching male *A. iris* with open or closed wings directly aligned to the sun probably aids thermoregulation. Conspecific flights lasted longer, but were less frequent compared to patrol flights.

Male-male interactions usually first involved a species recognition phase (Andersson, 1994). This phase of a flight in *A. iris* lasted approximately five seconds and entailed a face-off whereby both butterflies circled each other in a tight circle, horizontally and also often vertically, frequently without gaining height. It is likely this initial contact also included an indication of any asymmetry in fighting ability between the two butterflies. Often both then spiralled much higher before one veered away, usually flying roughly parallel to the ground and therefore downwards away from the site with the other male in pursuit. Sometimes both males in pursuit would return to the site and leave again without perching. A conspecific flight usually ended with one male returning to its original perch or to another close by. Frequently a returning male would repeat a species recognition phase of a flight (Andersson, 1994) with another male before it re-alighted or almost as soon has it had perched. This interference behaviour together with the observations that occasionally two or more males would return and perch apparently unaware of each other suggests that males are not engaging in a 'contest competition' (Milinski & Parker, 1991) and are unable to obtain exclusive use of the area where *A. iris* males engage in the perching and patrolling behaviour continuum described by Scott (1974) at a hilltop situation. Some patrol flights, elicited conspecific flights from three perched *A. iris* males. The competitive advantage of aggregating may be relative to other mate location strategies. This might explain why, on some days, *A. iris* males did not aggregate at well used hilltop sites when males were assembling on the ridge elsewhere. Visibility at both sites was restricted and unlike Brown & Alcock (1990) who marked Red Admiral *Vanessa atalanta* males at a hilltop, the *A. iris* in this study were unmarked. These constraints made it difficult to obtain quantifiable data for the three prerequisites required by Baker (1983) to show territoriality by male *A. iris*. Population size is likely to affect the frequency of conspecific flights but when few male–male encounters (Ehrlich, 1984) were recorded, patrol flights continued sometimes by a singleton. For example at the Beech site in the first year there were only five days out of 11 when more than one male was present and similarly six days out of 16 in the second year. Despite the limited assembling at the Beech site males were active for 18.64% of the duration of all watches, estimated from all flights including those that were timed and not timed. The means of conspecific flights by *A. iris* at the Oak site were 50.32 ± 13.87 *s. p* = 0.05 and 57.2 ± 9.90 *s. p* = 0.05 and were likely to be for a longer time than the mean of 16.4 ± 3.7 s. for the Red Admiral *Vanessa atalanta* recorded at a hilltop by Brown & Alcock (1990).

Female *A. iris* Activity

The location of male *A. iris* is desirable in a mate location strategy by females and not because of any location of important resources required by females (Davies, 1991) that are absent from both sites in this study. The female seen at the Beech site was leading males away from the site (Thomas & Lewington, 1991). In this instance three males were in attendance suggesting males are unlikely or unable to obtain exclusive access to females at favoured sites. Ultimately it is the female that decides if mating will occur depending if the female is receptive or not (Svard & Wiklund, 1989; Wiklund & Frosberg, 1991). Although only two female *A. iris* were seen at the sites during the study they are likely to serve as favoured encounter sites, in a cooperative mating strategy by females in search of males with females ultimately in control (Wiklund, 2003). As females emerge later than males, the presence of males is predictable at some favoured sites. For example male *A. iris* butterflies were seen before females emerged, aggregated at the Oak site in both years of the present study and also in each of the preceding five years. This strategy of site fidelity insures males are available to females when required and would enable females to benefit from easy location of males and to facilitate quick mating (Parker, 1978).

Observations on Mate Location

In this study early in the afternoon in the first week of the flight season two male *A. iris* were seen at one of several mature Oaks *Q. robur* bordering the edge of a forest ride 600 meters from the Oak site and 30 meters below it. They engaged in repeated species recognition phases of flights (Andersson, 1994) during a 14 minute watch on 30 June 2008. A male *A. iris* was still present there at 1700 hours the same afternoon. *A. iris* was not seen again at this locality during 10 visits made before the end of July. This site was not therefore an established favoured site like the Oak and Beech site and its use was transient, as perhaps lacking a dispersal barrier (Brown & Alcock, 1990). This behaviour probably occurred at an indeterminate number of places, early in the flight season elsewhere in Alice Holt forest, but it proved difficult to find examples. *A. iris* may respond to several visual cues before ultimately reaching a favoured site. If this is the case *A. iris* is likely to visit other landmarks before responding to the visual cue by which these butterflies eventually reach and aggregate at a landmark that provides no further visual cues, so creating a dispersal barrier as envisaged by Brown & Alcock (1990). This behaviour may partly explain the use of a favoured site during one year and in a largely unchanging landscape, also its use in previous years. Initially the sequence of responses to visual cues required to reach an established favoured site may take more than a day. The temporary use of the Oak by the two male *A. iris* in this study would support this. In *A. iris* male mating success selects protandry (Fagerstrom & Wiklund, 1982) so female *A. iris* are unlikely to encounter, or to be receptive to males (Wiklund, 2003) at transient favoured sites early in the flight period. Also males at these sites could not gain an advantage over males aggregated at a favoured site by attempting to intercept females en route to a favoured site.

In this study hill-topping at high points along a ridge reduces the area where male *A. iris* are patrolling or perching as described by Wiklund (2003) in his review of the ecology of mate location strategies of butterflies. Perching species fly to investigate a butterfly within its field of vision. Whereas patrolling species encounter other butterflies when flying (Scott, 1974). *A. iris* appears to switch readily between the density dependent behaviour of perching and patrolling and vice versa and is seen as behaviour in a continuum. The benefits of patrol flights by *A. iris* may include locating rival males as well as maximising the probability of mating with females that were rarely observed at the two sites studied. On the other hand energy costs and exposure to predation by birds may increase.

The proportion of the total population of male *A. iris* aggregating, at any one time, at landmark sites within Alice Holt forest is unknown but appears low. In the morning male *A. iris* were observed using a different mate location strategy by flying between the branches of *S. caprea*, on lower ground, and away from the ridge. The Grey Hairstreak *Strymon melinus*, whose mate location strategy also involves a landmark site, has like *A. iris* an enormously bias ratio of males to receptive females as observed by Alcock & O'Neill (1986). The aggregation of fertile male *A. iris* insures males are competitive and the energy costs of patrol and conspecific flights are a necessary part of this competitiveness where populations are low and widely dispersed.

Acknowledgements

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OBITUARY

REGINALD ARTHUR BELL, 1950 – 2009

Reg, as he was known among his small circle of friends in the British Entomological & Natural History Society, passed away on 5 July 2009, aged only 59 years. To many entomologists on the Hampshire scene, he was also a familiar name.

He was born in Winchester and spent the whole of his life there; if not within the city boundary, then at Sparsholt nearby, and it was here that he became well-known for the remarkable migrants that turned up annually in his garden light-trap, perhaps his most memorable being a female *Megalographa biloba* (Stephens) (Stephens' Gem) from which a fine series was bred.

The late Reg Bell pictured at an informal gathering of entomological colleagues at the home of Tony Pickles, during 1996. From left to right: Tony Pickles, John Phillips, **the late Reg Bell**, Rev. Steve Pittis, Ray Cook, Mark Middleton, Graham Howarth, Alec Harmer and non-entomologist Don Humphries.

His first attempt at making his way in life was as an electrician, but he was a very independent individual and could not stand the constraints of paid employment, so he opened a shoe sale business which flourished until he was driven out of the premises he occupied by unfair competition. He then turned to finance and after a series of self-employed jobs within a larger organisation, he eventually became a highly successful mortgage broker in his own right with a very loyal following.

Of more interest to us is his life in the world of Natural History and fortuitously, he was an avid diary-keeper. His first entry is interestingly dated 6 January 1965 and simply states 'Got a pheasant up Parley Mount'. The entry on the next day says: 'Had pheasant for dinner'. He was fifteen years old then. After this the diaries record over the years, his keen interest in ornithology and fishing in which he recorded every bird he saw and the weight and species of every fish he caught and commented on their taste or the price he sold them for. The first mention of Lepidoptera was in 1972 when he recorded the pupae he was overwintering, all of which were hawk-moths. He also stated that he went fishing 61 times that year, but after this, the birds and fish began to take a back seat since he mentions on 10 March that 'he had got his first moth trap today and would be trying it tonight'. Then he plunged into the world of naming and recording all the Lepidoptera he saw and this carried on right up to the time of his death. These diaries in the distant future, will give a valuable insight into our world.

I first met Reg in 1981, with his faithful and attentive dog Jason in Kent on a quest for *Hydraecia osseola* (Staudinger) (Marsh Mallow moth). We quickly became firm friends, visiting and entomologising together over many years, indeed for the rest of his life as he became more dependent on other people for his activities. It was on that first night that I realised that he had serious problems with mobility due to severe rheumatoid arthritis. This was to plague him for all his life as it led to increasing complications, some manifest and some occult, about which he did not want anyone to know. The greatest tribute that I can pay to him is that he never ever complained about his lot – ever. He had more reason to complain than anyone I had ever met. His GP would plead with him to sign himself permanently off work, but he preferred his independence.

The smartest thing he ever did was to marry Susan, 'Suzy', as she was known to all of us, and she not only ran the household and brought up Felicity, their daughter, and stepson Glen, but became a proficient field worker in her own right. Many were the times when Suzy and Felicity went up into the mountains in Scotland on some task that Reg had set for them and almost invariably with success. It is to be greatly regretted that Suzy was diagnosed with a terminal illness in 2007 and died on 4 August 2008. Reg did not get over the blow despite the solace that Felicity was able to give him.

Reg began his entomological career under the guidance of Denzil Ffennel, an old BENHS member who fired his interest on a fishing trip to the River Itchen, where they accidentally met in 1971. Denzil gave the good advice that he should not record outside his garden for the first year so he could gain some proficiency in identifying and he assisted with the more difficult species. Reg's ambition was to breed all the British macrolepidoptera that it was reasonable to breed and in this he largely succeeded. His meticulous voucher collection is being deposited with the Hampshire Museum Services where it will be well curated. During the last few years when mobility became a really serious problem, he did not take to his

SOCIETY MATTERS

NEW AES LOCAL GROUP AT BANGOR

A new fledgling branch of the Society has been set up at Bangor University by Kara Majerus. The group is active on Facebook and may be contacted through the Society, or directly via the information on the website http://www.amentsoc.org/membership/local-groups/bangor/

DONATIONS TO THE SOCIETY

We are very grateful to a number of members and others who have recently made donations to the Society, in particular for the very generous donation of £1000 to the Michael Majerus Fund by Don McNamara. We have also received two separate donations of £500 each from charitable trusts, one being the Panton Trust and another who wishes no publicity. Thanks also to another anonymous donor who has given us the prize money for the 2009 Gardiner Award. This award, for the best Bug Club Magazine articles in 2009, will be formally presented to the winners at the AGM on 24th April. The donation of the prize money will take a little pressure off the Ansorge Fund in the current economic climate.

The donations page on our website has now been updated so that people wishing to make online donations can choose how their contributions should be used. The options are a) the general running of the Society; b) development and promotion (the Crow & Hammond Fund); c) support of the Bug Club (the Ansorge Fund); and d) support of education and research projects, to encourage a new generation of entomologists (the Michael Majerus Fund).

YOU ONLY PAY TWICE

Some subscribers have inadvertently paid twice for their 2010 subscriptions. We think we have identified all those who have, but if there is anyone we have missed please get in touch by writing in to the AES address or emailing registrar@amentsoc.org

OXFORD YOUNG ENTOMOLOGISTS' DAY

This event, led by Darren Mann, was extremely successful, with around 80 attendees. Eighteen young people aged 5 to 17 gave talks on entomology in the lecture theatre of the university's Museum of Natural History. The overall winner was Safiya Lim, aged 9, who gave an excellent PowerPoint-illustrated presentation describing her observations on ants. Safiya has the enviable job title of 'Manager of the Ants' Nest' at her school, and an article based on her talk, together with an account of her impressions of the day, will appear in the April *Bug Club Magazine*.

FROM THE ARCHIVES

An advertisement in the *Bulletin of the Amateur Entomologists' Society* dated October 1952 read: "Dr P. M. Sheppard (291), Genetics Laboratory, Dept. of Zoology, University Museum, Oxford, wants living eggs, larvae or pupae of *Papilio machaon* (Swallowtail) from the Continent for genetic research. Will buy or exchange for living British *P. machaon* or South African *P. demodicus*."

The advertisement was answered by AES Member Dr Cyril Clarke, of the David Lewis Northern Hospital in Liverpool. Clarke and Sheppard went on to collaborate on the study of genetics in various Papilio species, Sheppard eventually moving from Oxford to join Clarke in Liverpool. They wondered how their entomological studies on sex-linked inheritance might be applied to medicine, and the answer came in the form of a treatment for Rhesus babies, in particular the practice of post partum administration of Rhesus antibody to the mother, a technique which resulted in a fall in the mortality rate in rhesus babies nationally and led to the establishment of a Nuffield Unit for Medical Genetics at Liverpool.

AES Events Calendar

Please see the AES website for full and up to date listings of AES and other events.
All AES events are free to members and their guests.

Further details can also be obtained from the Secretary by post or via email (secretary@amentsoc.org)

FORTHCOMING EVENTS: APRIL & MAY

Saturday 24th April: 2010 Members' Day & AGM

As previously announced, this year's Members' Day will be held at the Angela Marmont Centre for UK Biodiversity, the Darwin Building, Natural History Museum, Cromwell Road, London SW7 5BD. The proceedings will formally commence with the AGM at midday.

A full programme will be available on the day and will include:

- A varied programme of talks on entomology and invertebrate conservation, including the Third Annual Leonard Tesch Lecture which this year will be delivered by AES President Dr Robin Wootton, on the topic of 'how and why butterflies fly'.
- Various display stands, including the AES, Bug Club and our affiliated societies
- A members' exhibit table – please bring an exhibit (historical items are particularly welcome, as this year is our 75th anniversary as a Society)
- Tours of the Museum's entomological collections

- Workshops
- 'Crafty Corner' insect crafts table
- Refreshments
- Book launch: *The scary adventures of Basil the Beetle* by Sonia Copeland Bloom

3rd May: Buckland May Fayre

This is an outreach event at Buckland, near Reigate, Surrey, at which the AES will have a stall, including 'moths on a log'.

Saturday 15th May: Mothing at Perivale Wood Local Nature Reserve

This National Moth Night event is for AES and Bug Club members and their guests only. The event will be led by AES member David Howdon. There is no charge but please note that booking is essential: please inform the AES Secretary (secretary@amentsoc.org) if you plan to attend, so that the precise time and location details can be sent to you.

Perivale Wood is a 27 acre (11 hectare) area of ancient oak woodland in west London. It is bounded to the north by the Grand Union canal, to the south by a railway embankment and houses, to the west by industrial units and to the east by houses and recreational open space.

The reserve is managed by the Selborne Society as a memorial to 18th century naturalist Gilbert White.

For details of further AES and other events please check out our website www.amentsoc.org

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AES Membership Rates 2010

Membership of the Society runs from 1st January to 31st December each year. New members will receive all publications published during the year of enrolment subject to availability, except for those joining on or after 1st October.

Members joining on or after 1st October will be deemed to have joined for the following year unless a specific request for membership of the current year is made. In such cases, the publications already published that year will be sent with the enrolment confirmation letter and the remaining ones received as they are published. A further membership subscription will be necessary for the following year.

If you have any queries about membership please contact us via the website, www.amentsoc.org or PO Box 8774, London SW7 5ZG

Individual Adult Membership

Membership sub-category	UK	Overseas
Bulletin only	£20.00	£25.00
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armchair but returned to his bird watching with the aim of photographing all the breeding British birds which he admirably pursued by getting a long distance lens and photographing them through his car window.

I hope that I have painted a picture in this obituary of a resolute and indefatigable naturalist who can be an example to us all in the pursuit of our interest and who stood and fought authority over the little things in life like careless untimely trimming of hedges, unnecessary mowing of roadside verges and spraying the environment with noxious chemicals. Felicity and Glen, his stepson, can be proud of him.

One final drama occurred at his committal, appropriately at the Hinton Park Woodland Burial Ground in the New Forest. It was a sunny calm day and at the graveside as the coffin was being lowered, three species of butterfly visited the wreaths around the grave, a Painted Lady *Cynthia cardui*, a Comma *Polygonia c-album* and a Common Blue *Polyommatus icarus*. I looked up and overhead there wheeled two Buzzards *Buteo buteo*, the subject of one of his finest photographs.

BRIAN ELLIOT

Stigmella samiatella (Zell.) (Lep.: Nepticulidae) bred from Oak *Quercus robor*

Thorp Perrow Arboretum near Bedale in North Yorkshire (O. S. grid reference SE 2585), is said to be one of the finest collection of trees and shrubs in the UK and was mostly planted from the 1930s onwards. Some fine old specimens of Pedunculate Oak *Quercus robur* date back much earlier. These usually show evidence of larval mines of various *Stigmella* species. A tenanted mine was collected on 4 October 2005 and an adult emerged on 17 March 2005. This was confirmed as *Stigmella samiatella* by Mr H. E. Beaumont. *Stigmella samiatella* has a wide distribution across Europe where it feeds on Oaks *Quercus* spp. (deciduous) and Sweet Chestnut *Castanea sativa*. It has been bred from *Castanea sativa* in the UK but this appears to be the first published record from *Quercus*. — CHARLES H. FLETCHER, The Forge, Hutton Conyers, Ripon, North Yorkshire HG4 5EB (E-mail: chfletcher@btinternet.com).

BRITISH DISTRIBUTION OF *ARICIA* LEP: LYCAENIDAE

Bill Smyllie

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Abstract

The genus *Aricia* in Britain is represented by three taxa, Brown Argus, *Aricia agestis* (D. & S. 1775), Northern Brown Argus, *Aricia artaxerxes* (Fabricius, 1793) and Brown Argus hybrids (*Aricia agestis* × *artaxerxes*). It is necessary to decide on boundaries between these three 'races' so that any locality where the butterfly occurs can be adequately categorised in order to construct a national distribution map. Parts of the large lunulation data bank are used to provide figures which allow any colony or area to be classified into one of the above three taxa. Where relevant, broad similarities between information via genetic analysis and male upper forewing lunulation are mentioned.

Key words: Brown Argus, *Aricia*, Lycaenidae, distribution, lunulation, voltinism, phased emergence.

Introduction

For a long time there has been discussion and differing opinions about the status of *Aricia* colonies, particularly in the north of England, and to some extent, in Scotland. Salient points from the genetic analysis of *Aricia* colonies in North-West Europe (Aagaard et al, 2002) together with unpublished genetic analysis on British colonies (Wynne, pers. comm. 2002) has been summarised (Smyllie, 2004). The Aagaard *et al.* paper showed that the Scottish race was similar to *Aricia allous* in Europe.

With regard to the specific aspect of *Aricia* hybrids, Aagaard *et al.* were unable to confirm these although the presence of *Aricia artaxerxes* in the north of England was confirmed. A more sophisticated analysis (Wynne, pers. comm. 2002) was able to confirm the presence of hybrids. This backed up the contention over a period of time that *Aricia* hybrids existed (e.g. Smyllie, 1992; 1998; 2008). A map constructed by Wynne shows 100% Brown Argus from the south coast to the Peak District, a zone from there to north Lancashire showing varying proportions of Brown Argus and Northern Brown Argus, and 100% Northern Brown Argus further north. The difference regarding general comments and a national distribution map is that boundaries between the three taxa have to be decided so that any individual colony can be adequately classified. Before looking at lunulation, four points require some comment; phased emergence, the approach necessary to convert information on any colony into a dot on a distribution map, voltinism and a reference to past migration routes.

Abbreviations used

In order to shorten reference to the three taxa, Brown Argus will be referred to as BA, Northern Brown Argus as NBA and hybrids as BAH. Also 'male upper forewing lunulation' will be referred to as mufl.

Phased emergence

Established *Aricia* sites in Britain, those in existence before the recent migration due to global warming, have flight periods of eight weeks or longer. At all BA sites the mufl drifts downwards through the flight period (Smyllie, 2004) indicating an increasing NBA component. This means that any sampling method can only give an approximation of the colony's status, particularly if sampling was limited to one day, as was the case with Wynne's genetic samples. In museum collections a number of different days in different years are involved. Although the spread will be wider than a single day there is still no real precision because of the underlying variation. This means that any set boundaries will be reasonable when colonies are not near them, but if they are near, it will be difficult to classify the site in question with any certainty.

Distribution Maps

The current maps for British butterflies (Asher *et al.*, 2001) show their distribution on a map of Britain and Ireland. There are no *Aricia* in Ireland so we are concerned with Ordnance Survey references in mainland Britain. Mainland Britain and islands are covered by a grid of squares with sides of just under 2cm on each map, and this length represents 100km. Each 100km square can be identified by two numbers, or more often and in this paper, by two letters. Coloured dots up to just over 1mm in diameter in the maps represent recent records where each dot represents a 10km square. The Ordnance Survey reference for each 100 km square is made up of the two identifying letters followed by two numbers for any 10km square. From the bottom left-hand corner each square is numbered 0 to 9 going both east and north. The convention is that each square is identified giving the Easting (horizontal) figure first, followed by the Northing (vertical) figure. We are concerned therefore with being able to identify 10km squares and allocating any site to one particular square or more than one if the site crosses a boundary between squares. Provided sites in the same 10km square have similar lunulation characteristics, they can be aggregated to provide higher totals for that square.

If a 1km square reference is used for any site the location process is repeated within the 10km square, so a two-figure reference is for 10km squares and a four-figure for 1km. Some maps and reporting systems use tetrads, which are squares with 2km sides. There are 25 of these in a 10km square and each is identified by a letter of the alphabet following the 10km reference. In this paper only 10 and 1km squares are referred to. A series of Ordnance Survey maps cover the country and can be accessed on the internet via e.g. Multimap on Google where one of the forms available is in OS format. As an example, Bakewell in the Peak district is in the 10 km square SK26 and very largely in three 1km squares, SK2167, 2267 and 2168.

The present maps show BA and NBA distribution with coloured dots for 1995-99, and are due to be updated in 2010 covering 2000-09. A convenient way of including BAH will be required. In view of the comments on phased emergence and as a matter of prudence it is suggested that sites retain their BA or NBA status unless there is good evidence for changing to BAH.

Voltinism

It is not just genetic analysis and lunulation figures which are able to contribute to settling the status of any BA colony. Voltinism can play a significant role in determining which sites can be classified as BA. South of the Peak District BA colonies are bivoltine. Butterfly Conservation records provided by members since 1995 have been examined. In Derbyshire, those colonies in the Peak District with BA status do not have a second brood every year, but they can have a partial second brood provided the summer is good enough. This shows up via September records which occur irregularly at one year in × where × is variable between two and around five. The point is however, that BA colonies do have some September records while the hybrid colonies have records which are not later than 23 August. Similar checks have been applied to Yorkshire Wolds, Yorkshire Dales, North Yorks Moors, North Lancashire and Cumbria. The Yorkshire Dales colonies do not go beyond 23 August, while both the Wolds and Moors colonies have September records. The North Lancashire and Cumbria records will be commented on later. Since BAH and NBA are single brooded, they cannot be separated by this approach.

Wildlife has seen it all before

This heading refers to a map published in *Natural World* (the Wildlife Trusts' magazine) on p.19 of Winter 2007. It shows that the last forced southward movement of species at around 30,000 BC was due to ice advancing in a NW-SE direction and nearly reaching the Bristol Channel. In a warm spell around 10,000 years ago at the end of the ice-age, the main thrust was in the east of England and was more northerly. As one of 15 species moving north as a result of present global warming, BA started from Norfolk in 1992, had reached Yorkshire by 1997 and Durham by 2006. Bad summers have since stalled further advance up to the end of 2008. However, in travelling north it has gone past the Peak District and the Yorkshire Dales without having traversed far enough west to impinge on the colonies in either area. This is in line with the above description. The distribution of present BAH sites indicates movement along relatively narrow preferred highways rather than a broad front and can be explained by this map.

Lunulation

Each *Aricia* butterfly has a series of orange spots round the edge of each upper wing. These are known as lunules and can vary between 0 and 6 on both fore and hind-wings. Male upper forewings show the greatest degree of variation and so have been chosen as an indicator of any colony's status. Provided a lunule can be seen with the naked eye it is counted as one. With photographs and projectors around, it is important to remember that checks are with the naked eye and that magnification will give greater detail.

As numbers build up, the relative frequency of various numbers becomes more clear-cut, and higher totals give a more accurate picture. The early data bank for *Aricia* males was compiled around 1990 from collections at 23 museums spread over England and Scotland. To these have been added a small number from private collections, and a moderate number from field checks at selected sites giving a total of around 3,000. With a range of numbers from 0 to 6 available, several combinations can be used for comparison. The challenge is to select the combination which will give adequate information in as simple a format as possible. The Table below compares 0 and 6 mufl figures for the south of England (south of Rivers Thames and Severn), England up to the Peak District, Scotland north of the Rivers Forth and Clyde followed by SE and SW Scotland. These zones have been chosen initially because they are furthest apart and are reference points against which other sites or 10 km squares in the central zone can be compared.

Table 1. Lunulation in major areas.

Area	**6mufl/ Total**	**%**	**0mufl/ Total**	**%**	**Status**
England south of Thames/Severn	103/252	40.9	0/252	0	BA
England south of Peak District	238/549	43.4	0/549	0	BA
Central and N Scotland	0/271	0	154/271	56.8	NBA
South East Scotland	0/54	0	19/54	35.2	NBA
South West Scotland*	1/30	3.9	7/30	23.3	NBA

* A series of five males labelled Wigtonshire contains two with 6mufl and has been excluded.

The figures show that there are no real differences in 6mufl males between the south of England and further north as far as the Peak District. There is a mirror image situation between the above England figures with no occurrence of 0mufl males in 549 and in Scotland (excluding the SW) where there are no 6mufl males in 318. It must be remembered that SW Scotland sounds further north than it really is. It is very similar in Latitude to inland and coastal Durham. In Scotland the 0mufl component has decreased significantly between Central and North, and further south. At the same time only one 6mufl has been recorded (in S.W. Scotland). The combination of 6 and 0mufl for any site or area has in fact proved to be adequate in charting the changes which have occurred between the extremes in Table 1. It is felt that the simplest approach is to present relevant 1 or 10km squares in the zone between the Peak District and S.E. Scotland together with their status, and then indicate how the limits have been reached. In Table 2 below the sites start at the most southerly one for BA, which is inland N. Wales, and then move steadily further north. They are split into BA, then NBA and finally BAH so that variation in limited numbers can be followed. BAH finish unexpectedly as far north as S.E. Scotland.

Brown Argus: BA

BA is not particularly common in the central zone, and Nos. 1-5 are representative of the main areas. The major aspect is the 6mufl component and this varies from over 40% down to 17%. The minimum requirement has been set at 15% with 6mufl. Apart from No 16, Sherburn Hill which is discussed later, there is no other site which has a 6mufl figure anywhere near 15%. At the lower end Pickering, No. 5, has had September records, which are indicative of BA. Interestingly two records from Ian Wynne's genetic map appear to coincide with Nos. 1 and 5, showing 75% BA in each case.

Turning to the 0mufl figures, only No 1, Perthichwareu and 2, Coombs Dale, have single occurrences with %s much less than 5%. Having looked at the situation with NBA, a figure of 5% max. has been fixed as a secondary requirement for both BA and NBA, from a minimum of 20 specimens, since the occurrence of one specimen for the minor component in less than 20 can only get low enough with 20+ specimens.

Northern Brown Argus NBA

Looking first at the 0mufl figure, this varies from over 50% down to 23.3% for S.W. Scotland in Table 1. The SD48 figure, Table 2 No. 9 at 26.1%, is not much higher. A figure of 20% 0mufl minimum has been set for NBA with the minor figure at 5% 6mufl from a sample of 20 minimum. The figure for SD48 of 4.5% with 6mufl from 111 males appears to indicate a situation near the BAH boundary, but still NBA. Perusal of Tables 1 and 2 shows no main 0mufl figure anywhere near the 20%. The genetic map for what appears to be SD48 shows 37.5% BA, a little inside the hybrid zone. In this mixed situation it is suggested that it stays as NBA.

Brown Argus Hybrids BAH

Having set 6mufl at >15% for BA and 0mufl at >20% for NBA, it follows that hybrids will account for anything else, so will contain <15% with 6mufl and <20% with 0mufl. The only doubtful site is Table 2, No. 16, Sherburn Hill, inland

Table 2. Lunulation between the Peak District and S.E. Scotland.

No	1/10km sq.	6mufl/T	%	0mufl/T	%	Comments	Status
1	SJ1853	8/47	17.0	1/47	2.1	Perthichwareu: inland N Wales	BA
2	SK2274	59/170	31.7	1/170	0.6	Coombs Dale: Peak District	BA
3	SJ 78,88	22/56	39.3	0/56	0	N. Wales coast	BA
4	SE 96	7/15	46.7	0/15	0	Yorkshire Wolds	BA
5	SE8584	10/44	22.7	0/44	0	Pickering: N. Yorks. Moors	BA
6	SD98,99/65	1/22	4.2	10/24	41.7	Grass Wood, Yorkshire Dales	NBA
7	SD6973	0/4	0	3/4	75.0	Park Gill, Yorkshire Dales	NBA
8	SD47*	1/80	1.3	27/80	33.8	3 sites in N Lancashire/Cumbria	NBA
9	SD48	5/111	4.5	29/111	26.1	2 sites in N Lancashire	NBA
10	NZ44	0/92	0	33/92	35.9	2 sites: Durham coast	NBA
11	NT9562	0/10	0	6/10	60.0	Eyemouth (&Coldingham)	NBA
12	SK16,17	1/25	4.0	0/25	0	Deep Dale: Peak District	BAH
13	SK1972	2/107	1.9	13/107	12.1	Longstone Edge: Peak District	BAH
14	SK2174	2/30	6.7	0/30	0	Longstone Edge: Peak District	BAH
15	NZ33	3/66	4.5	2/66	3.0	2 sites in inland Durham	BAH
16	NZ3341	6/29	20.7	3/29	10.3	Sherburn Hill: inland Durham	BAH
17	NT9561+	0/11	0	0/11	0	Burnmouth, SE Scotland	BAH

* A series labelled Grange-over-Sands contains four with 6mufl in nine and has been taken out
+ These figures do not affect SE Scotland

Durham which has >15% with 6mufl. It does however have 3/29 = 10.3% with 0mufl, significantly more than 5% max. Bearing in mind that it is quite a bit further north than other BA sites it seems appropriate to classify it as BAH.

There are only six 10squares involved and three of these are in the Peak District. Because they are significantly further south than other examples, they appear to be related to the NW-SE ice-age movement which started 30,000 years ago. The other three do seem to be connected to the last global warming period 10,000 years ago: in the east of England *Aricia* colonies are sparse – North Yorkshire Moors, Inland Durham and Burnmouth in S.E. Scotland. The fact that BAH has reached as far north indicates that the main migration route is unlikely to impinge either on the Peak District or the Yorkshire Dales, because it would has done so before in reaching S.E. Scotland. Migrants would need an easterly gale to blow them off course at a critical point in their migration. For ease of reference, some comments related to specific areas follow.

The Peak District

The Aagaard *et al.* paper contained lunulation data and the lunulation at Cressbrook Dale in the Peak District was significantly lower than expected. This led to checks on several Dales between 2004 and 2007 (Smyllie, 2008). These checks confirmed the Aagaard *et al.* figures. Previously lunulation figures had only been gathered from BA Dales, a chance situation. Wynne's genetic map showing two BAH sites in the Peak District was not known about until 2007. The broader situation is that both BA and BAH colonies exist relatively near one another.

A total of four BAH Dales were recorded. Two of these, Monks Dale and Cressbrook Dale are completely in SK17. Of the other two, Deep Dale (the Plantlife Reserve) is partly in SK17 and partly in SK16. Longstone Edge is partly in SK17 and partly in SK27. These dales have three BA dales near them, Cunning Dale in SK07, Lathkil Dale partly in SK16 and partly in SK26, while Coombs Dale is in SK 27. These Dales are relatively near one another, but the west end of Coombs Dale is only a little over 1.1km to the north of the east end of Longstone Edge.

Not only have two different approaches coincided re hybrids in the Peak District, the proximity via lunulation means that in normal circumstances the butterflies must be very sedentary. This is important because as a result the lunulation data has to be scanned carefully to make sure that different colonies near one another are not overlooked in the general figures for any area. In fact this scan brought up three sites for further scrutiny, and these will be discussed under individual areas. There may be more than four BAH dales in the general vicinity but numbers in the 2004/07 surveys were too low to be meaningful. There do not appear to be any BA colonies in 10km square SK17. It is suggested that the four BAH Dales represent the end point of a movement of NBA from NE to SW, and they are surrounded by three untouched BA sites, Coombs Dale, Lathkil Dale and Cunning Dale.

The Yorkshire Dales

Data for Grass and Bastow Woods covers the S.E. corner of the Dales (Table 2, No. 6) and confirms NBA. Park Gill approximately 9km further north also shows NBA. It would be prudent to collect some data from a site on the western boundary.

The North Yorkshire Moors

No.5 Pickering has already been classified as BA and the fact that this is the furthest north area for BA supports the suggestion that the Wolds and North Yorks. Moors have been bolstered in the past by northwards migrating BA. There are no mufl data for 10km square SE 58 (e,g, Ashberry Pastures SE 5784) and since this is the furthest N.W. BA square it would be prudent to collect some.

Durham

Continuing evidence of the migration just referred to occurs in Durham where two inland 10km squares NZ 33 and 34 are both BAH (Table 2, Nos 15 and 16). The two sites checked in NZ33 are Thrislington NNR, NZ 3132, and Bishop Middleham Quarry, NZ33 31&2. The coastal colonies are quite different, are NBA, and have around 5% with white forewing discal spots indicating some presence of the Scottish race. Although these spots can be seen down to the south coast, their occurrence at inland Durham, Cumbria and North Lancashire is very much lower, less than 1%. The inland and coastal Durham colonies are in adjacent 10km squares, and this indicates that travel routes S-N and N-S can pass very close to one another without necessarily overlapping.

North Lancashire and Cumbria

A series of nine males marked Grange-over-Sands in SD 47 contained four with 6mufl. This might indicate a BA colony and led to records from both areas being examined to see if there were any in September. There were in fact two in North Lancashire and one in Cumbria. The climate near the coast in these areas is more benign than in the Peak District, so if BA colonies were really present, there would be at least as many September records as in the Peak. This is not the case so the conclusion is that there are no BA colonies in this area. If migrating BA should arrive, then not only will their food-plant be more variable than the staple Rock-Rose, but there should be two broods each year: this has been the pattern in South Yorkshire where previously there were no established colonies. One possible site for the Grange series (which is pre 1990) is Meathop Quarry. Today though it is overgrown and not suitable for grassland butterflies.

South East Scotland

A series of 11 males from Burnmouth (O.S. NT 9561) contained no 0mufl or 6mufl specimens: in this case a majority of seven had 4mufl. The Eyemouth

District was visited in June and July 2009. The Burnmouth site is a very steep slope, so was ignored as there were adequate museum records (Table 2, No. 17). The combination of six field records for Eyemouth and two added to two museum records for Coldingham showed that both had over 20% with 0mufl and the combined total is in Table 2, No. 11. The distance between the Burnmouth and Eyemouth coastal sites is 1.5 km maximum. So the limit of BA penetration here has been Burnmouth, much further north than previously suspected. In the *Millennium Atlas* there were records from 10km square NT 95, but there have been none in the band 2000-2009. This short distance involves NBA and BAH compared with BA and BAH in the Peak District: there is no evidence therefore of interpenetration of different *Aricia* taxa close to one another.

South West Scotland

A series of five males labelled Wigtonshire contains two with 6mufl. It is possible that there may be a BA or BAH site there. There are several colonies in what used to be Wigtonshire, so the information is not precise. It is planned to look at records for S.W. Scotland to see if there are any recent September records.

Foodplant

In Spain *Arcia morronensis,* which exists in mountain habitats, can feed on eight different *Erodium* plant species (Munguira, M.L., & Martin, L., 1986). This is a much larger number than our NBA which feeds largely on Rock-Rose, *Helianthemum chamaecistus (nummularium).* A similar situation exists with BA which, prior to recent migration fed largely on Rock-Rose and, away from limestone habitats, on Common Stork's-bill, *Erodium cicutarium.* It is interesting to note that at Gibraltar Point NNR in Lincolnshire, the colony fed on this latter plant and went extinct in 1970. In 1995 it was verified as having recolonised via migrants from Norfolk. Also the fact that migrants did so well in South Yorkshire was due to set-aside coupled with the fact that they were able to feed on two or three *Geranium* species which were not confined to limestone habitats. One conclusion from this is that an improving climate allows *Aricia* to have a greater range of foodplants which considerably increase its ability to colonise more than limestone sites. The fact that these habitats were not colonised prior to global warming and migration indicates that cooler temperatures were not able to support *Aricia* via the *Geranium* foodplants. It follows that, initially at least, global warming should be an advantage for *Aricia* and other species where there are adequate foodplants.

Discussion

The picture which has emerged for *Aricia* is that of a sedentary species which has three taxa where the central one is called a hybrid, and where the other two have varying percentages of 0 and 6mufl, their most significant components. Varying lunulation means that these differences can be seen, but the forced movements via ice ages and global warming must have affected a wide range of flora and fauna. Those which failed to survive will have disappeared, but those which are still with us have survived not one but a succession of ice-ages and global warmings through the millennia. The experience will have made each species more complex provided the fraction which enjoyed quicker growth in warmer climates could cross-breed with that which had a slower growth history in a colder climate. For most species there is no obvious morphological difference between these portions.

To return to *Aricia*, the fact that migrant colonies have shorter brood lengths indicates that only a BA rich part of the southern colonies is actually migrating (Smyllie, 2008). Also, any other species with a flight period of eight weeks or more will have a constitution similar to *Aricia*. So far the well-lunulated BA colonies in the Peak District have shown no tendency to migrate, presumably due to a factor connected with a long exposure to the more rigorous Peak District climate when compared with southern England. The point is that *Aricia* have some complexities which we cannot at present explain and that many other species will have similar complexities. The fact that immigrants from the continent can bolster some of our resident butterflies regularly will not cancel out the echoes of ice-age movements, they will merely add another layer of complexity. One way of looking at the present *Aricia* migration is that the number of BAH sites may increase, or that NBA sites may have their BA content increased. This is one small step in a very slow process towards homogenisation.

What we do know is that our present species have survived previous fluctuations involving global warming and ice-ages. We do not yet know whether our attempts to reduce carbon dioxide emissions etc. will result in the present warming staying within past limits. If this can be the case our species should survive. They may survive in different and smaller retreat areas from which they can expand in more favourable conditions. Even if global warming is more severe than hitherto, this may diminish the retreat areas without leading to extinction. The Mountain Ringlet, which appears to be very vulnerable, has somehow managed to hang on until now. It is both comforting and laudable that landscape scale projects will maximise different habitat areas and therefore the help which we can give our wildlife re present and future climate change challenges.

Acknowledgements

I am indebted to several people for help in various aspects of this paper. Barry Prater provided precise details re the location of *Aricia* at Burnmouth, Eyemouth and Coldingham. Similarly Paul Millard provided instructions for reaching Park Gill, Yorkshire Dales. Dave Howson obtained very useful photos via Karen Bullimore from Bastow Wood. Laura Sivell and Steve Hewitt provided Butterfly Conservation records for North Lancashire and Cumbria respectively, while Steve Doyle commented on the present state of Meathop Quarry near Grange-over-Sands.

A paper on genetic and other aspects of *Aricia* will be published and is in press: (2009) Introgression between species, species limits and the conservation implications of climate change: brown argus butterflies in Britain (*Polyommatus* subgenus *Aricia*). My thanks go to James Mallet, Ian Wynne and Chris D. Thomas for permission to use information from that paper in the present work.

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Enemies of figwort weevils *Cionus* sp. (Col.: Curculionidae)

During May and June 2009, insects associated with figwort plants *Scrophularia nodosa* growing along the margins of the wide rides in Wall Wood, Hatfield Forest were observed. On 12 of June, several specimens of the wasp *Symmorphus gracilis* (Brullé) (Hym.: Eumeninae) were seen taking nectar from the figwort flowers (Plate 11, Fig. 1) and hovering around the leaves, many of which bore the feeding damage of figwort weevils, *Cionus* sp. One of these wasps was seen to dive for a figwort weevil larva on the underside of a leaf before dragging it to the upper surface and then stinging and biting the larva (Plate 11, Fig. 2). Satisfied that the larva was suitably subdued the wasp took off for its nest carrying its prey. According to Budriene (2004. PhD thesis, available at *http://www.ekoi.lt/info/theses/Budriene_2004_summary.pdf*) in Estonia an average female *S. gracilis* builds a nest consisting of 3-4 cells, each of which is stocked with 13 *Cionus* larvae, which means these wasps must be very busy throughout the early summer months.

In addition to the predation by *S. gracilis*, the *Cionus* sp. larvae and pupae were also targeted by several parasitoid wasp species. Several of these were seen in the field, but to confirm identification around 40 *Cionus* pupae were collected and maintained in small tubes in order to collect any adult parasitoid wasps. After 3-4 weeks, many adult parasitoids did emerge and to date two species have been identified by Dr Steve Compton of the University of Leeds. These are the eulophid wasps *Entedon cionobius* Thompson (Plate 11, Fig. 3) and *Baryscapus endemus* Walker) (Hym.: Eulophidae). The former is a specialist of *Cionus* sp. weevils, but the latter is thought to be more of a generalist as it has been reared

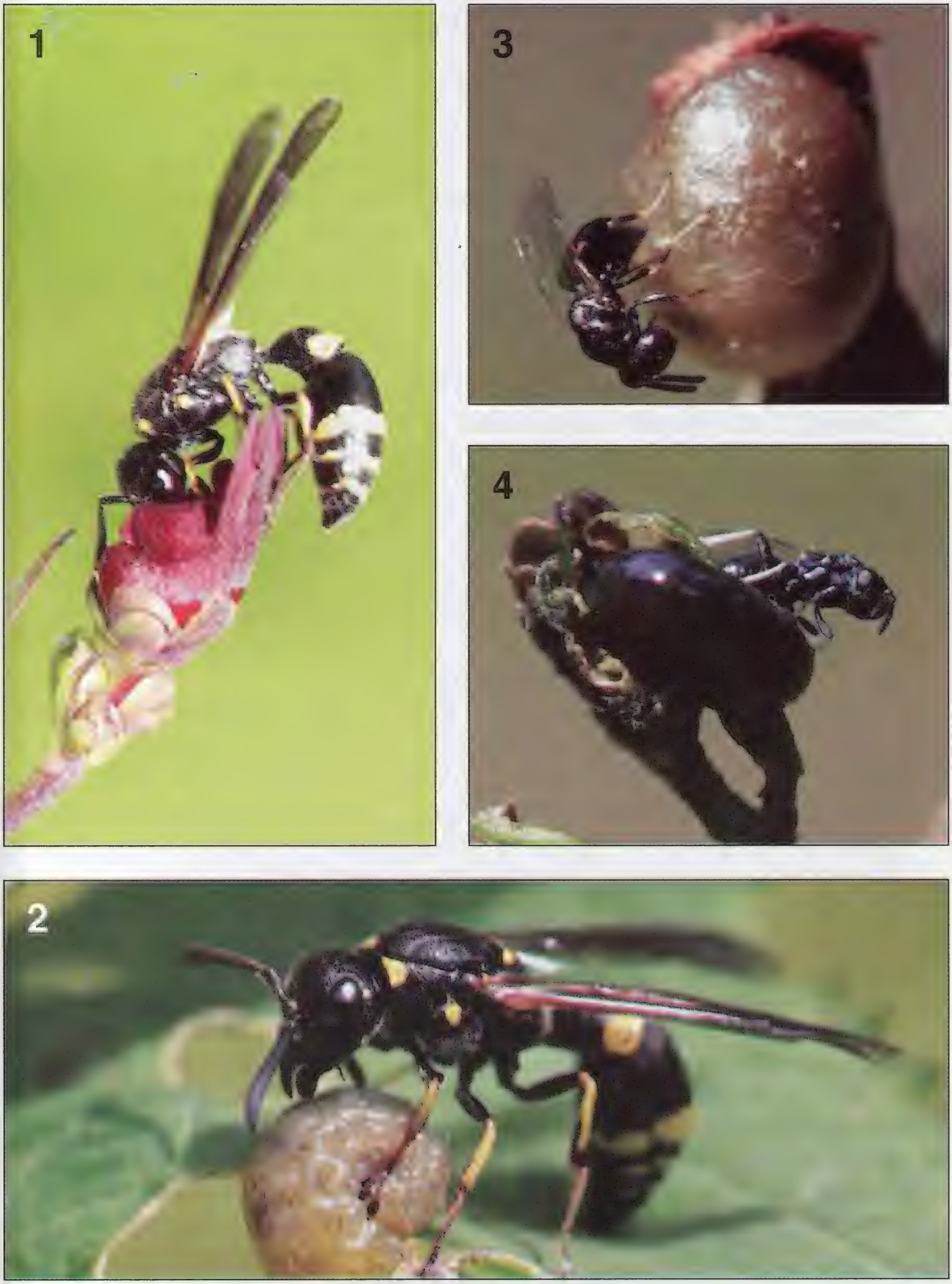

Plate 11. Some enemies of figwort weevils. 1: *Symmorphus gracilis* at figwort flower; 2: *S. gracilis* manipulating a *Cionus* sp. larva; 3: *Entedon cionobius* and *Cionus* pupal cocoon; 4: *Pteromalus* sp. and *Cionus* sp. larva.

from a number of beetle species. These species were multiple parasitoids of the *Cionus* sp. weevils, with five or six adults emerging from each parasitized pupal cocoon. A third parasitoid species has yet to be identified to species level, but it is in the genus *Pteromalus* (Plate 11, Fig. 4). As parasitoids go, this is quite a large species and only one or two emerged from each parasitized cocoon. Of the adult weevils that emerged, three species were eventually recorded: *Cionus scrophulariae*, *C. tuberculosus* and *C. alauda*. Further rearing is planned for next year to get more of an understanding of the fascinating relationships that occur between the figwort eaters and their many enemies.— ROSS PIPER, 20 Trinity Street, Bishop's Stortford, Hertfordshire CM23 3TJ.

The Concolorous *Chortodes extrema* (Hb.) (Lep.: Noctuidae) in Huntingdonshire

Although *C. extrema* had been recorded in Huntingdonshire since before the publication of 'The Fenland Past and Present' (Balding, J. (ed). 1878. *Lepidoptera*. In: Miller, S. H., and Skertchly, S. B. J., 1878), it has always been local occurring on few sites in the county. In 'The Fenland Past and Present' it is recorded as being found at Whittlesey Mere, Yaxley Mere and Holme Fen, all sites that have under gone major changes during the last century. There are several references to it in the *Victoria County History* (*VCH*) (Omer-Cooper, J., 1926. *Lepidoptera*. In: Page, W and Proby, G. (eds). 1926), but only two sites are named; these being Woodwalton Fen and Holme Fen.

All the records since the publication of the *VCH* have been either from one of the three National Nature Reserves: Holme Fen, Monks Wood or Woodwalton Fen or from Ramsey Heights Clay Pits, a Wildlife Trust reserve which is close to Woodwalton Fen. However, in recent years *C. extrema* has only been recorded from Monks Wood. The last record from Holme Fen was on 22 June 1992, Woodwalton Fen 14 June 1997 and at Ramsey Heights Clay Pits 1993.

In 2006 for the first time since before the publication of the *VCH* two *C. extrema* were recorded away from National Nature Reserves. Brian Stone caught one in his garden trap in Elton on 18 June and Andrew Frost caught the second in Yaxley on 25 June. These sites are several miles from Monks Wood. Because the summer of 2006 was unusually hot and exceptional numbers of migrants arrived in Britain during the summer the appearance of *C. extrema* on these two sites were attributed to migration. However during June 2009, a year with very poor moth migration into Huntingdonshire, *C. extrema* was recorded again on both of these sites. The first appeared on 15 June in Andrew Frost's trap in Yaxley and on the following night, 16 June, Brian Stone recorded it in Elton. This now poses the question is *C. extrema* breeding somewhere close to these two sites. It is hoped that during 2010 that we will be able to investigate this further and maybe locate suitable areas where breeding may be taking place. — BARRY DICKERSON, 27 Andrew Road, Eynesbury, St Neots, Cambridgeshire PE19 2QE (Email:barry@eynesbury27.freeserve.co.uk).

TORTRICID MOTHS NEW TO THE BULGARIAN AND EUROPEAN FAUNA (LEPIDOPTERA: TORTRICIDAE)

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Abstract

Dichrorampha inconspiqua (Danilevsky, 1948) (= *inconspicua* misspelling) is reported for the first time for Europe and *Phtheochroa reisseri* (Razowski, 1970), *Cnephasia heringi* Razowski, 1958, *Cydia intexta* (Vl. Kuznetzov, 1962), *C. conjunctana* (Möschler, 1866) and *Pammene querceti* (Gozmany, 1957) are reported as new for the Bulgarian fauna, from several dry rocky localities in the valley of the Struma River. Information about their habitats is given. Some peculiar characters of the Bulgarian specimens of *D. inconspiqua* are commented upon and illustrated and the correct spelling of the specific epithet *inconspiqua* is briefly discussed.

Key words: Bulgaria, Tortricidae, faunistics, habitats, genitalia.

Introduction

This study is a result of a three-year period of investigation of the tortricid fauna in a relatively small, but zoogeographically very interesting area in south-west Bulgaria. The region of research covers the southern part of the Struma River valley, the so-called Krupnik-Sandanski-Petrich Region. It consists of two geographically distinct units, which are very similar in biogeographical aspects – the Kresna Gorge and the Sandanski-Petrich Basin. Kresna Gorge has steep, mostly dry, even semi-arid rocky slopes covered by communities of many Mediterranean plant species (e.g., *Juniperus excelsa* M. B., *Phyllirea latifolia* L., *Pistacia terebinthus* L.). Small relatively humid gullies surrounded by vertical rocks are also present. The Sandanski-Petrich Basin has various habitats including karst (the western foothills of the Pirin Mountains) and volcanic formations, (e.g. the remnant of the extinct volcano Kozhuh), marshes along the rivers Struma and Strumeshnitsa and typical mediterranean communities of *Juniperus oxycedrus* L., *Paliurus spina-christi* Mill. and *Quercus coccifera* L., the last occuring in two localities only. The entire region is characterized by dry, hot summers and mild winters and this is the reason why many thermophilous species can survive here and not in other regions of the country.

Although the region has been investigated by many Bulgarian and foreign entomologists for more than 100 years, even now new and unexpected species are reported. Further researches of this important area might discover many undescribed and new species for the Bulgarian and European fauna.

Material and methods

Active collecting was undertaken by the authors and material in the collections of the National Natural History Museum (Sofia) and the Depot of the Institute of

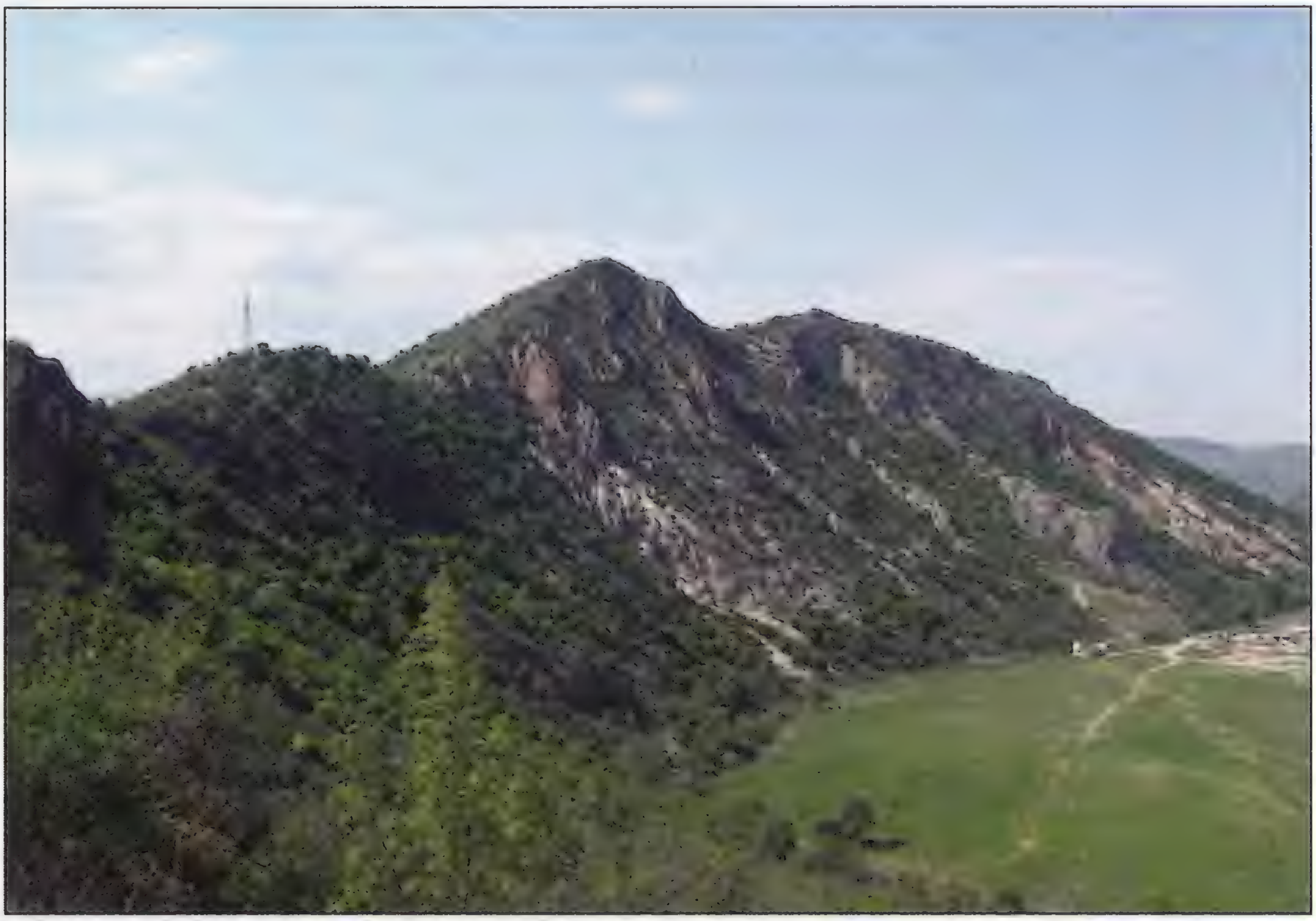

Plate 9. Denuded marble rocks along the ridge of volcanic hills at Kozhuh, near Petric in south-west Bulgaria. *Phtheochroa reisseri* was collected at 200 metres altitude on the northern part of the ridge.

Plate 10. Hot, dry habitat dominated by limestone rocks at Ilindentsi, south-west Bulgaria where *Cydia intexta* and *C. conjunctana* were found.

Zoology (Bulgarian Academy of Science) was studied. Moths were collected by netting during the active period of the moths and by light trapping. All material is preserved in the collection of the Faculty of Biology (Sofia University 'St. Kliment Ohridski'). The genitalia were extracted by the standard procedure (Robinson, 1976) and embedded in Euparal within plastic containers pinned to the specimens. Some of the *D. inconspiqua* material is the property of the Zoological Museum of the University of Copenhagen, Denmark.

Abbreviations:
FB – Faculty of Biology, Sofia University 'St. Kliment Ohridski', Bulgaria
NMNH – National Natural History Museum, Sofia
IZ – Institute of Zoology, Bulgarian Academy of Science
ZMUC – Zoological Museum of the University of Copenhagen, Denmark

Results of the study

The name of species follow Razowski (2002; 2003) except for genus *Cydia*, for which we follow Danilevsky & Kuznetzov (1968).

Phtheochroa reisseri (Razowski, 1970)

Bulgaria: Volcanic hill of Kozhuh near Petrich Town, 200 m, N41°27'42.6" E23°15'29.9", 01.v.2008, 1 ♂ by net, 2 ♂♂ in light trap, leg. B. Zlatkov (FB).

Distribution: S France, Crete (Razowski, 1970; Huemer & Luquet, 1992; Razowski, 2002). **New for Bulgaria**.

The moths were collected in the northern part of the hill, on the ridge where denuded marble rocks are present (Plate 9).

Cnephasia heringi Razowski, 1958

Bulgaria: Kresna Gorge near Kresna Town, 02.vi.1930, 1 ♂; 30.v.1931, 1 ♂, leg. K. Tuleschkow (NMNH); volcanic hill of Kozhuh, 13.vi.2008, 1 ♂ at light, leg. B. Zlatkov & O. Sivilov (FB).

Distribution: Crete, Asia Minor, Russia (Volgo-Don Reg., Dagestan, S. Ural), Transcaucasia, Turkmenia (Razowski, 1958; Kuznetzov, 1978; Razowski, 2002; Sinev & Nedoshivina, 2008). Unknown from the Ukraine (Kostyuk, 1980) but erroneously recorded for here in Razowski (2002). **New for Bulgaria**.

All localities are warm and dry rocky habitats.

Cydia intexta (Vl. Kuznetzov, 1962)

Bulgaria: Karst formation near Ilindentsi Village, 515 m, N41°39'10" E23°14'56", 20.v.2008, 5 ♂♂ at light, B. Zlatkov leg.; volcanic hill of Kozhuh, 13.v.2006, 1 ♀ by net; 15.v.2007, 1 ♀ by net; 19.v.2008, 3 ♂♂, 2 ♀♀ at light, leg. B. Zlatkov (FB).

Distribution: Spain, France, Italy, Switzerland, Austria, Czech Republic, Slovakia, Ukraine, Rossia (Middle Volga reg., Volgo-Don reg., S. Ural), Kazakhstan, Turkmenia (Kuznetzov, 1962; Danilevsky & Kuznetzov, 1968;

Kuznetzov, 1978; Razowski, 1996; Sinev & Nedoshivina, 2008). **New for Bulgaria**.

Cydia conjunctana (Möschler, 1866)

Bulgaria: Karst formation near Ilindentsi Village, 03.vii.2007, 1 ♀ by net; 14.vi.2008, 3 ♂♂, 1 ♀ at light, leg. B. Zlatkov & O. Sivilov (FB).

Biology: The host plant in Crimea is *Dorycnium herbaceum* Vill. (Budashkin, 2009).

Distribution: Spain, France, Italy, Austria, Czech Republic, former Yugoslavia (Croatia, Dalmatia), Slovakia, Romania, Greece, Ukraine (Crimea), Transcaucasia (Kuznetzov, 1978, Razowski, 1996, 2003). **New for Bulgaria**.

C. intexta and *C. conjunctana* occur on the rocks near Ilindentsi (Plate 10) and differ distinctly in their flight periods. The habitat is hot and dry limestone area with many springs and various Mediterranean plants: *Juniperus oxycedrus* L., *Paliurus spina-christi* Mill., *Centaurea diffusa* Lam., *C. calcitrapa* L. and *Stipa bromoides* (L.) Dörfl.

Pammene querceti (Gozmany, 1957)

Bulgaria: Near Kamenitsa village, 250 m, N41°38'22" E23°09'54", 16.iv.2006, 15-18 h, 1 ♀ by net, leg. B. Zlatkov (FB).

Distribution: France, Italy, Austria, Czech Republic, former Yugoslavia, Hungary, Slovakia (Razowski, 1996, 2003). **New for Bulgaria**.

The specimen was collected from a *Q. coccifera* L. community – a habitat limited to a small area in the eastern foothills of the Maleshevska Mountains.

Dichrorampha inconspiqua (Danilevsky, 1948)

Bulgaria: Kresna Town, 17.vi.1973, 2 ♂♂, leg. A. Slivov; Greece: Macedonia/Thessalia, Olympos 700-2100 m, 21-26.v.1990, 8 ♂♂, 2 ♀♀, leg. O. Karsholt (ZMUC).

Distribution: Transcaucasia (Armenia, Azerbaijan) (Danilevsky & Kuznetzov, 1968; Kuznetzov, 1978). **New for Europe**.

This species is included for Europe from mainland Greece on the Fauna Europaea web site (*http://www.faunaeur.org*) on the basis of the Macedonian data listed above. Not withstanding this, we have been unable to discover any formal paper publication of this species for any part of Europe – certainly not in any recognised, peer-reviewed journal. Accordingly, we regard our report as being the first published for *D. inconspiqua* in Europe. The Bulgarian specimens, collected almost 40 years ago, are not set and are in bad condition, so we provide only figures of the genitalia (Fig. 1). We are not aware of any colour illustrations of the adult moth. According to Danilevsky & Kuznetzov (1968) it is very similar to *D. cinerosana* (Herrich-Schäffer, 1851), *D. obscuratana* (Wolf, 1955) and *D. plumbana* Scopoli, 1763. Both Bulgarian specimens have three large apical and two very small basally located spines on the aedeagus. According to the figure of Danilevsky & Kuznetzov (1968) (p. 149, fig. 59a) the spines are equal, 5-6 in number.

At the Fauna Europaea web site the specific epithet is spelled "*inconspicua*"; we regard this as incorrect. The original spelling is "*inconspiqua*" and this is the name used by the First Reviser and all later Russian authors (e.g., Obraztsov, 1953, 1958; Danilevsky & Kuznetzov, 1968) and is correct in respect of article 32.5 of the International Code for Zoological Nomenclature.

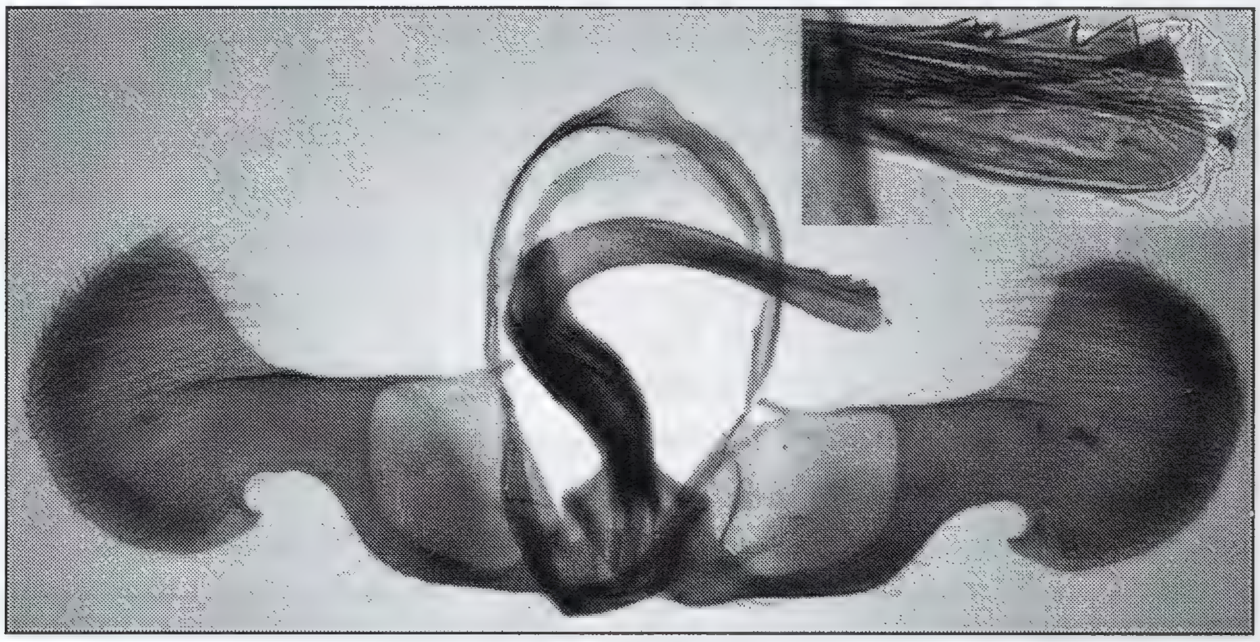

Figure 1. Male genitalia of *Dichrorampha inconspiqua* (Danilevsky), Kresna, south-west Bulgaria, 17.vi.1973, leg. A. Slivov. INSET: Detail of tip of aedeagus.

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We would like to thank T. Ljubomirov, curator of the Depot of the Institute of Zoology (Bulgarian Academy of Science) for his help in searching the collection. We acknowledge very much Ole Karsholt (ZMUC, Denmark) and Leif Aarvik who consulted us and permitted to publish the data on *D. inconspiqua* from Greece. Colin W. Plant (Bishops Stortford, England) supplied linguistic help. An anonymous English referee made several helpful suggestions for improving an earlier draft of this paper.

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The Ruddy Carpet *Catarhoe rubidata* ([D. & S.], 1775) (Lep.: Geometridae) in Saffron Walden, Essex, 2004-2009

The Ruddy Carpet is a declining Nb species, thinly but widely distributed over much of the south of England and Wales. In Essex, it has been documented by the Essex Field Club at 11 sites since 1970, with only four records since 2000 and the last reports from TL71 and TL72 in 2005 (*http://www.essexfieldclub.org.uk/portal/p/Species+Account/s/Catarhoe%20rubidata*). We have been recording moths using a 15w actinic Skinner trap in a small enclosed backyard in the Saffron Walden town centre (TL537386) since the autumn of 2004. During the following five seasons, single examples of the Ruddy Carpet were recorded on 29 June 2006 and 13 June 2009. The species is reported as favouring chalk downs and sea cliffs, habitats notable by their absence in Saffron Walden town centre, so these individuals must be wanderers from the surrounding countryside. Indeed, the moth was reported from the nearby tetrad TL5436 in 1983 by Saffron Walden's most eminent entomologist, the late A. M. Emmet (Emmet and Pyman, 1985. *The Larger Moths and Butterflies of Essex*. Essex Field Club) and thus seems to be a long-term resident in the locality. Although the surrounding habitat is intensively farmed, the underlying rock is chalk, and both this species and the Na species the Four-spotted moth *Tyta luctuosa* survive in the neighbourhood. — Chris Tyler-Smith and Yali Xue, 8 Museum Street, Saffron Walden, Essex CB10 1BN.

Key jangling – a little known technique for calming agitated moths

Sorting through a trap full of moths on a summer morning often results in several moths needing to be photographed. On a warm morning this can be a problem if the moth is transferred from egg tray to a suitable photographic background such as a leaf or a piece of wood, as some larger moths, such as members of the Noctuidae, warm up their wings prior to take off by vibrating them rapidly in order to raise thoracic temperature. At home this is easily resolved by placing the moth in a container and lowering the body temperature in the refrigerator, but in the field this is not possible. For several years I have got round this problem by taking the bunch of keys I normally carry in my pocket and giving them a jangle. This results in considerable amusement amongst onlookers but also usually results in the agitated moth folding its wings and becoming docile for long enough for a voucher photograph to be obtained or for the moth to be passed around the audience for their inspection.

Many species of moths have specialised hearing organs used as defence against predation by bats. These are situated on the metathorax in the *Noctuoidea* and on the first abdominal segment in the Geometroidea, Drepanoidea and Pyraloidea. Amongst the Sphingoidea, some species of Macroglossinae have hearing organs in the second segment of the labial palps. Other families are effectively deaf (Rydell, J. & Young, M. R., 2003. The Ecology and Evolution of Lepidopteran Defences against Bats. In *The Moths and Butterflies of Great Britain and Ireland* Volume 4 (Part 1): 11-41.). These organs are able to respond to sounds of a wide frequency band but are most effective between 20 and 40 kHz, the frequency used by many bats. This may be one explanation why moths form a small part of the diet of many common bats which echolocate in the middle part of the range but a larger proportion of those which echolocate at very high or very low frequencies.

A typical bat audiogram shows greatest sensitivity to frequencies around 25kHz with a sharp decline in sensitivity at lower frequencies and a slower fall-off at higher frequencies. Testing several bunches of keys with my heterodyne bat detector (range 20 to 120kHz) showed that when agitated they gave off loud signals between 20 and 50kHz and a much quieter response at higher frequencies. The auditory organs in the palps of the Macroglossinae were first identified by Roeder in 1972 by using a jangling set of keys, and Waters showed that ultrasonic frequencies produced by keys around an MV lamp sent moths into a variety of dives, spirals and rapid changes of direction (Waters, D., 2003. Bats and moths: what is there left to learn. *Physiological Entomology* **28**, 237-250). I have observed moths around my own MV lamp taking evasive action from bats by visibly folding their wings and dropping vertically. It is therefore not surprising that moths warming up their wings are stimulated to fold their wings into a resting position when exposed to high frequency noise from jangling keys.

I have demonstrated this behaviour on many species of Noctuidae and some species of Geometridae and suspect that all moths with organs of hearing would respond in a similar manner.— CHARLES FLETCHER, The Forge, Hutton Conyers, Ripon, North Yorkshire HG4 5EB. (E-mail: chfletcher@btinternet.com)

Observations on Winter Moths *Operophthera brumata* (L.) (Lep: Geometridae) during the winter of 2009-2010

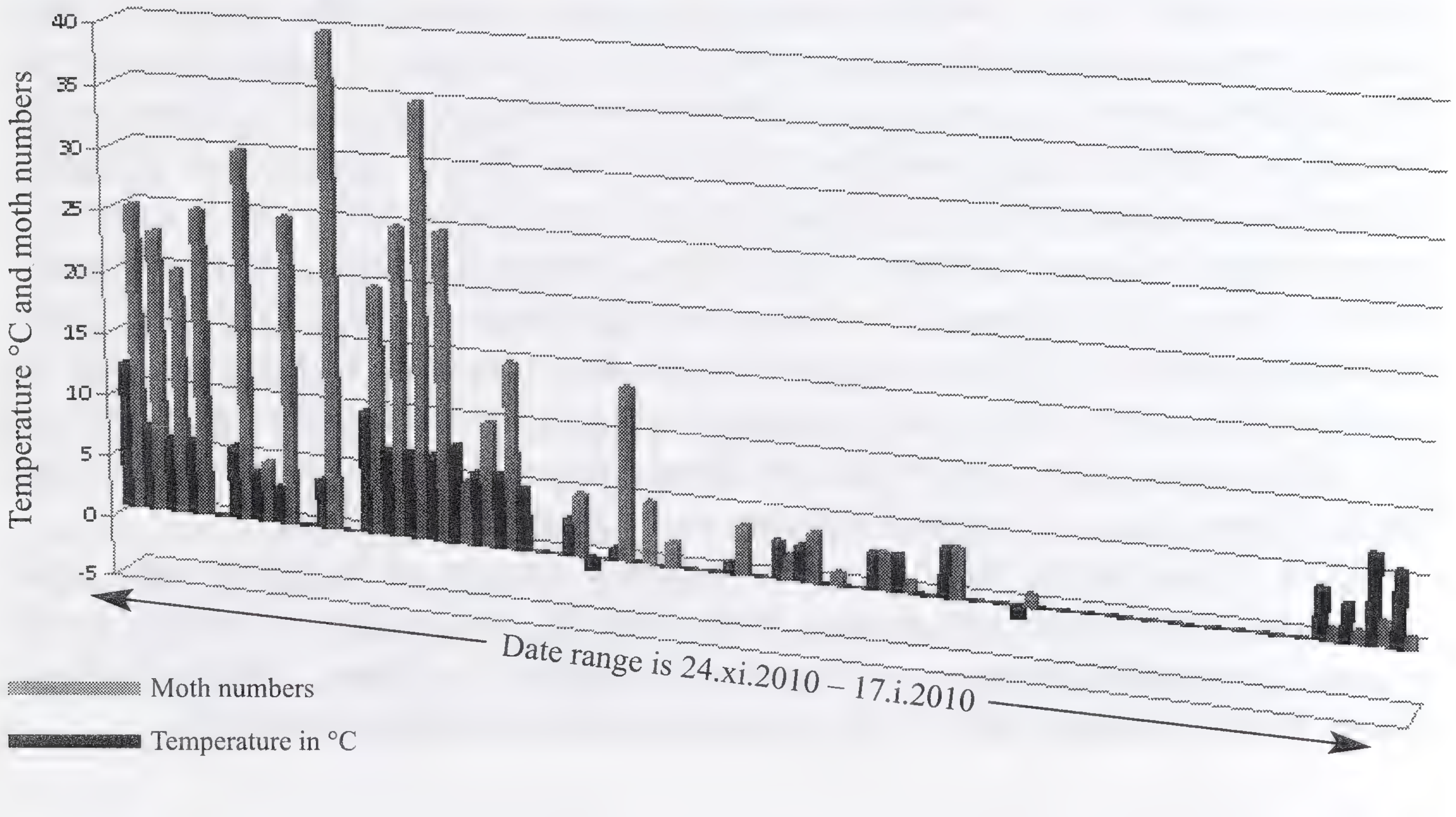
Winter moths were observed on a tree on Great Bookham Common, Surrey (O.S. grid reference TQ 130557) on most evenings between 24 November 2009 and 17 January 2010. Observations were made approximately thirty minutes to one hour following the published official nautical twilight time for London (by which time most moths that were going to appear on the tree had done so) and the temperature and climatic conditions noted. Males were counted on a section of tree trunk measuring between one and two metres from the ground, on the north-easterly side of the tree.

The numbers of male winter moths observed far exceeded those of the wing-reduced females. Although this may have been partly attributable to the ease with which the winged males can be seen, careful examination of the tree trunk, the fact that newly emerged females tend to be quickly scented and mated by males, and the presence of numerous unmated males roosting on the tree for some time into the evening indicate that many more males than females are present at a given location on a particular night.

Both individuals and mated pairs of winter moths tended to be more numerous low down on the south-westerly side of the tree during the period of observation, with relatively fewer individuals on the north-western section of tree, possibly owing to the proximity of an area of grass to the south-west side. Single male specimens which, it is assumed, had failed to mate that evening were numerous on the north and north-western side (the area where moth numbers were counted) when these observations were begun.

The numbers of male moths counted in the designated area were as shown in Figure 1.

Figure 1. Light coloured bars: moth numbers. Dark bars: temperature in °C. Date range is 24.xi.2010 – 17.i.2010. Days when the site could not be visited were November 28, December 2, 4, 19, 26, 29 and 31 and January 3 and 5-13.



Assuming these numbers relate to males arriving on the tree in search of emerging virgin females, the phenology shows consistent numbers of males active from 24 November until the end of the second week of December. Moth numbers seemed to be unaffected by moon phase or visibility, rain or snow during the previous day or during the evening. Fluctuations in temperature above 1°C were not associated with noticeable changes in moth numbers but, as might have been expected, the number of individuals fell substantially on evenings when the temperature fell below 0°C, around midwinter. Moth numbers appeared to decline to zero throughout the first fortnight of 2010, during a period of snowfall and freezing temperatures, with small numbers subsequently reappearing until mid-January, coinciding with the beginning of the flight periods of later winter species such as the early moth *Theria primeria* (Haw.) and broadly in line with phenological data obtained from moth trapping.

Monitoring a local colony of male winter moths as described illustrates how consistent data can be gathered on moth population activity during an emergence season. Phenological information on the winter moth obtained by monitoring an individual breeding 'colony' can also overcome some of the limitations of moth trapping. Winter moths usually only fly shortly after dusk, so the time a light trap is switched on can influence the catch. Moth numbers on a tree, on the other hand, remain approximately stable over a period of around two hours even if the temperature plummets, once the moths have flown to the tree in response to pheromonal attraction.

Given that more males than females of many species are attracted to light, light trap data relate for the most part to the passive flight activity of males rather than to any biological activity or active dispersal. The numbers of flying moths attracted to and observed or retained in light traps are also subject to numerous variables, such as the brightness and wavelength of the lamp, how attracted to light a particular species may be (Lewis 2010, in preparation) and the moth's flight period. Moth trap results also depend in an unpredictable way on weather conditions (humidity, wind strength and direction, temperature, cloud cover) and moon phase, and on the precise location of the trap. Moreover, dispersal flights can contribute to making detailed phenological conclusions unsound, and dispersal flights are themselves hard to determine from light trap data alone (Sokoloff, 2009. Possible dispersal flight of *Mesoligia furuncula* [D. & S.] (Lep: Noctuidae) and other species. *Ent. Rec.* **121**: 302). It is clear that whilst regular light trapping can provide phenological information, alternative methods such as described here should not be overlooked by amateur field workers and can provide useful adjunctive data in appropriate cases. — Dafydd Lewis, 186 Lower Road, Great Bookham, Surrey KT23 4AT.

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Initial funding of this Grant is with money donated in memory of Mike Majerus. As with all AES funds, public donations, directly or via legacies, are always welcome. Individuals and organisations wishing to donate to the Michael Majerus Fund are invited to contact the Treasurer of the Society in the first instance — AES Treasurer, PO Box 8774, London SW7 5ZG (e-mail: *treasurer@amentsoc.org*).

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NOTES ON THE EARLY STAGES OF THE TRIANGLE *HETEROGENEA ASELLA* ([D. & S.], 1775) (LEP.: LIMACODIDAE)

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[1] R. J. Heckford, [2] B. P. Henwood & [3] S. D. Beavan

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Abstract

Observations were made on the larva of *Heterogenea asella* ([D.& S.], 1775), in Devon, England, including descriptions of the first instar, feeding signs and other larval evidence as well as cocoon formation and incidence of parasitism.

Keywords: Lepidoptera, Limacodidae, *Heterogenea asella*, first instar, larval feeding, cocoon formation, parasitoids.

Introduction

Until 2004 *Heterogenea asella* had not been recorded in South Devon (Vice-county 3) since 1891, and was not known from North Devon (VC 4) until 1999 (McCormick, 2001), where, so far, it has been found only in one locality. In 2004 and 2005 respectively, 16 and over 45 larvae were found in two areas about 5 km apart in South Devon.

Modern British publications suggest that the larva feeds on the upperside of leaves of oak (*Quercus* spp.) and beech (*Fagus sylvatica*) high in the canopy. Barker, Fuller & Shreeves (2000) consider threats to the species and conclude that, other than large-scale clearance of trees on which it breeds, any threats are presently unknown due to poor knowledge of its ecology. Ellis (2000) states that it is not clear whether high forest or coppice/recent plantation is the preferred habitat.

Our observations are that the larva does not always occur high in the canopy and, at least on oak, it feeds on the underside of the leaves. We found larvae in areas of mature deciduous trees. We describe and illustrate what seem to be previously unpublished characteristic feeding signs and larval evidence which may enable more records to be made, and provide an account of the first instar and cocoon formation. We also consider the incidence of parasitism, which may have a significant effect on populations.

Distribution and certain historic accounts

Porter (1997) gives the British distribution as Wiltshire, Hampshire, Sussex, Kent, Oxfordshire, Buckinghamshire and Lincolnshire, where it is local in a few mature woods. He omits Warwickshire, Worcestershire, Cornwall and Devon, although records are indicated from these counties according to the distribution map provided for the species by Skinner (1985). Presumably the reason that Porter does not mention Devon is because of the lack of records between 1891 (Basden-

Smith, 1891) and the publication of his book in 1997. The species has also been found in two Essex woods (Waring, Townsend & Lewington, 2003). On this basis, *H. asella* has only been recorded from 12 counties in the British Isles, all in England.

One of the main areas for the species is the New Forest, South Hampshire (VC 11). It may be significant that Goater (1974) gives a number of records from VC 11, but all, apparently, of adults. Several have been published in this journal over the years and, as far as we can trace, for the period from 1880 to date all are of adults, mainly at light, except the following larval records:

> at least two larvae, foodplant unstated, in the 'New Forest' in the autumn of 1880 (Jobson, 1881),
>
> several larvae, foodplant unstated, between 1884 and 1892 at Lyndhurst (Hewett, 1890; Hewett, 1893),
>
> a larva beaten from an unspecified source in the 'New Forest' in 1933 (Symes, 1961).

Hewett (1890) records collecting various larvae at Lyndhurst between 15 and 16 September 1890, including one larva of this species on beech 'after about one hour's search'. Later he published a note (Hewett, 1893) which illustrates the avarice of certain collectors. If the species could not be found at Lyndhurst after 1892 then his note shows the potential reason, and so we quote it in full:

> '*My experience of* Limacodes asella *may be to the point. When I began collecting these in 1884 I took twenty or so larvae in October at Lyndhurst. Two years after (I could get none in '85) I searched for two hours and took one. I took it at almost the outset, so that my eye was not at fault. I bred that one and went down in 1886 and have been every year up to the present. I took five or six in 1888, I think Mr. H. A. Hill was with me, and took about the same number. Mine all died and so did his. Last year (1891) I took two and bred both. This year I went again, in rather a despairing mood and got several dozens, and Tate of Lyndhurst took two or three hundred I believe. I talked to him about them, and his experience exactly coincides with mine. Obviously then* asella *comes and goes. I hope the few members of the Exchange Club who have had larvae from me got them to pupate as well as mine have done – on the leaf or twigs. I have never taken the pupae in the wilds, nor has Tate. We have both searched carefully. Goodness knows where they go. The larvae must be searched for; no one can beat them in numbers. The picture in the Ray Society book is perfect, and from larvae of mine I believe.*'

We assume that the Ray Society book referred to is Volume 3 of *The larvae of the British Butterflies and Moths* (Buckler, 1888). Hewett lived in Winchester. For at least nine years he visited Lyndhurst and apparently collected every larva that he found, and we presume that, at least in 1892, Tate did the same. Apart from showing how many larvae he could find, Hewett's note tells us nothing of the species' ecology, not even the foodplant(s) apart from one found on beech in 1890, but it does make clear that the larvae needed to be searched for, rather than beaten. There is, however, one point of interest which is that, at least in 1884, he found larvae in October. We refer to this later.

Lyle (1912) states that in 1911 larvae of this species 'were almost entirely absent' in the New Forest. In the same year Corbin comments (1912) that 'we seldom hear of the large 'takes'… which old Charles Turner … once took so commonly' in the New Forest. This appears to be a reference to adults and not larvae. Whether this apparent reduction in the numbers of the species was the result of over-collecting the larvae or other causes, or both, is a matter of speculation.

Earlier observations on finding the larva

Tutt (1901), possibly based on Hewett (1893), comments that the larva must be searched for and cannot be beaten in numbers. Skinner (1985) states that the larvae of Limacodidae feed on the upper surface of leaves of trees and because of suction or adhesive silk are rarely dislodged by beating. Porter (1997) remarks that the larva can be obtained by beating, but only infrequently, which, in his view, probably indicates that it lives and feeds high in the canopy well out of reach although, as we found, this is not always the case. The photographed larva (Porter, 1997, plate 2: B) is recorded as being beaten from oak, full grown, in late September. This reference to a larva beaten from oak in September is the first published record that we can trace of a larva being found since Symes' note of one in 1933. The only subsequent published record of the early stages of which we are aware is of a larva and cocoon being found on sweet chestnut, *Castanea sativa* and another larva and cocoon on small-leaved lime *Tilia cordata*, both at Stansted Forest, West Sussex on 12 September 2006 (Langmaid, 2007). None of these larval accounts mentions what seems to us to be characteristic larval feedings, at least on oak, that we describe later.

Rediscovery in South Devon

The species was first recorded in Devon on 20 June 1890 by Mr F. J. Briggs (1890) who was beating for larvae during the afternoon and a pair of this species *in copula* fell into his umbrella; the plant or tree from which he beat these is not stated. The locality is given as 'the Plym Valley' and Briggs' address is given as Egg Buckland. He includes this record in some notes from Plymouth (Briggs, 1891), adding that 'I am nearly certain that a third specimen which was secured was the same species, but not knowing the rarity of the species it was discarded, as it had been rubbed in capturing.' This appears to be one of the first records of the species in the British Isles outside of the New Forest, Hampshire. The next Devon record, and the last before 1999, is of a female from an unstated locality somewhere in 'Plymouth' in July 1891 by Mr H. W. Basden-Smith (Basden-Smith, 1891).

Tutt (1899) summarises the then known localities of the species in the British Isles. He gives the following records from Devon: 'Plymouth (Basden-Smith), Plym Valley (F. Briggs), Kimpton (Rudd)'. The Ordnance Survey Gazetteer of Great Britain published in 1987 gives all place names from the 1: 50,000 Landranger Map Series. It lists 'Kimpton' as a place name in Hampshire and also Hertfordshire, but not Devon and so we believe that Tutt's inclusion of this name was a mistake. We have not been able to trace anything about Rudd.

In the Lepidoptera part of the *The Victoria History of the County of Devon*, Barrett (1906) states that the species had been recorded at 'Bickleigh Vale' by Mr J. Basden-Smith and in the 'Plym Valley' by Mr F. J. Briggs, but does not give any other information, not even dates. There are three places in Devon called 'Bickleigh'. Neither Briggs nor Basden-Smith in their published accounts mention 'Bickleigh Vale' and so we presume that Barrett obtained this name from one of them. There is a Bickleigh Vale within the Plym Valley, itself within the Plymouth area, which is in the far south-west of Devon, and so it is reasonable to assume that the 'Bickleigh Vale' of Barrett is within the Plym Valley and not elsewhere in Devon. This point is strengthened by the fact that in his introduction to the Lepidoptera section of *The Victoria History of the County of Devon* Barrett (1906) mentions that 'Mr W. H. Basden-Smith' had done 'good work' at Plymouth and refers to a 'Mr F. G. Briggs' of Egg Buckland. Eggbuckland (current spelling) is now part of the Plymouth suburbs, although in the late 1800s it was a small village. No mention is made in this introduction of a Mr J. Basden-Smith or a Mr F. J. Briggs, to whom Barrett refers on page 212. We assume that Barrett simply made errors in the initials.

Thereafter the species was not recorded in Devon until just over 100 years later, in 1999, when two males were attracted to light, one on 26 June and the other on 9 July, near Great Torrington, North Devon (VC 4). The next Devon record was in 2004 when RJH discovered early instar larvae at four localities in South Devon (VC 3). On 19, 20 and 22 August 2004 one larva was found on each date, each about 2.5-3 mm in length, and on 29 August two more larvae, about 4 mm in length, were found, all at Lower Hooksburry Wood. On 11 September two larger larvae were noted at Cadworthy Wood and two larvae of a similar size at Dewerstone Wood. On 18 September one larva was discovered at North Wood and on the same day we found six larvae at Cadworthy Wood. Cadworthy, Dewerstone and North Woods are all part of the same complex of woods on either side of the upper part of the River Plym. Lower Hooksburry Wood is about 5 km to the south-east and borders Tory Brook, a tributary of the River Plym. Mature uncoppiced *Quercus robur* is the predominant tree in all these areas, with *Fagus sylvatica* and *Betula* species being the other main trees. The following year over 45 larvae were seen at the same localities between 4 August and 10 September. Those found on the latter date were in their final instar.

All of the larvae were on the underside of *Quercus robur* leaves that were at the ends of branches which, with two exceptions, were at head height or a little above and were discovered by examining leaves which were in reach of the ground; no attempt was made to beat branches, but on a couple of occasions RJH climbed to branches that were about five metres above the ground and found a larva on each occasion. In view of the comments recorded earlier that larvae are rarely dislodged by beating, we tried sharply flicking the top of a leaf held by the petiole and with the larva underneath and observed that this failed to dislodge it.

Most of the trees with larvae were mature and all grew either on the edge of the woods or in clearings, and so the leaves were in sunlight for some, and probably most, of the day. No larvae were found on leaves that were in the shade. It is of interest to note that South (1961) states that the moth flies in the sunshine, chiefly in the afternoon whereas Skinner (2009) states that it flies occasionally in the afternoon sunshine but more frequently at night when both sexes come to light.

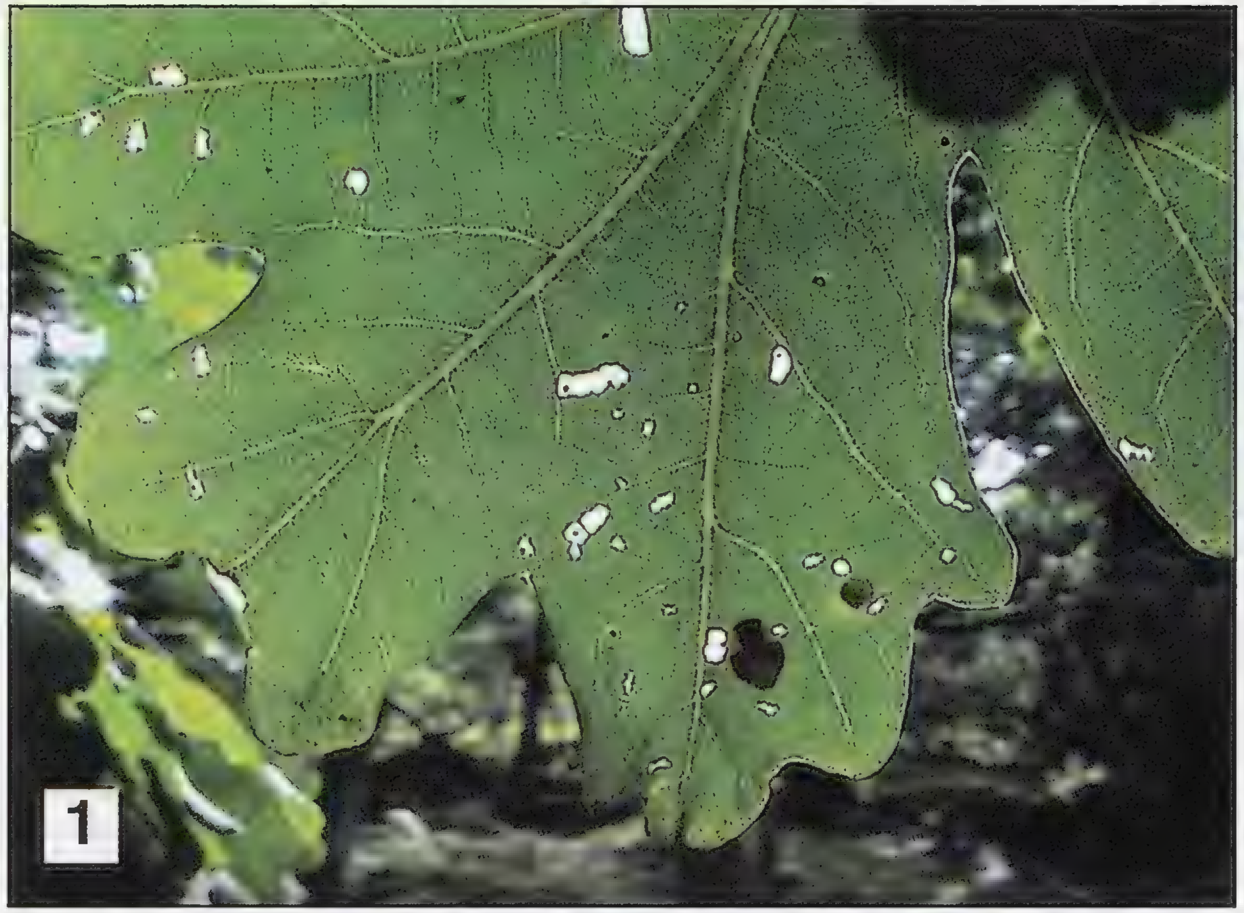
Larval feeding signs and other larval evidence

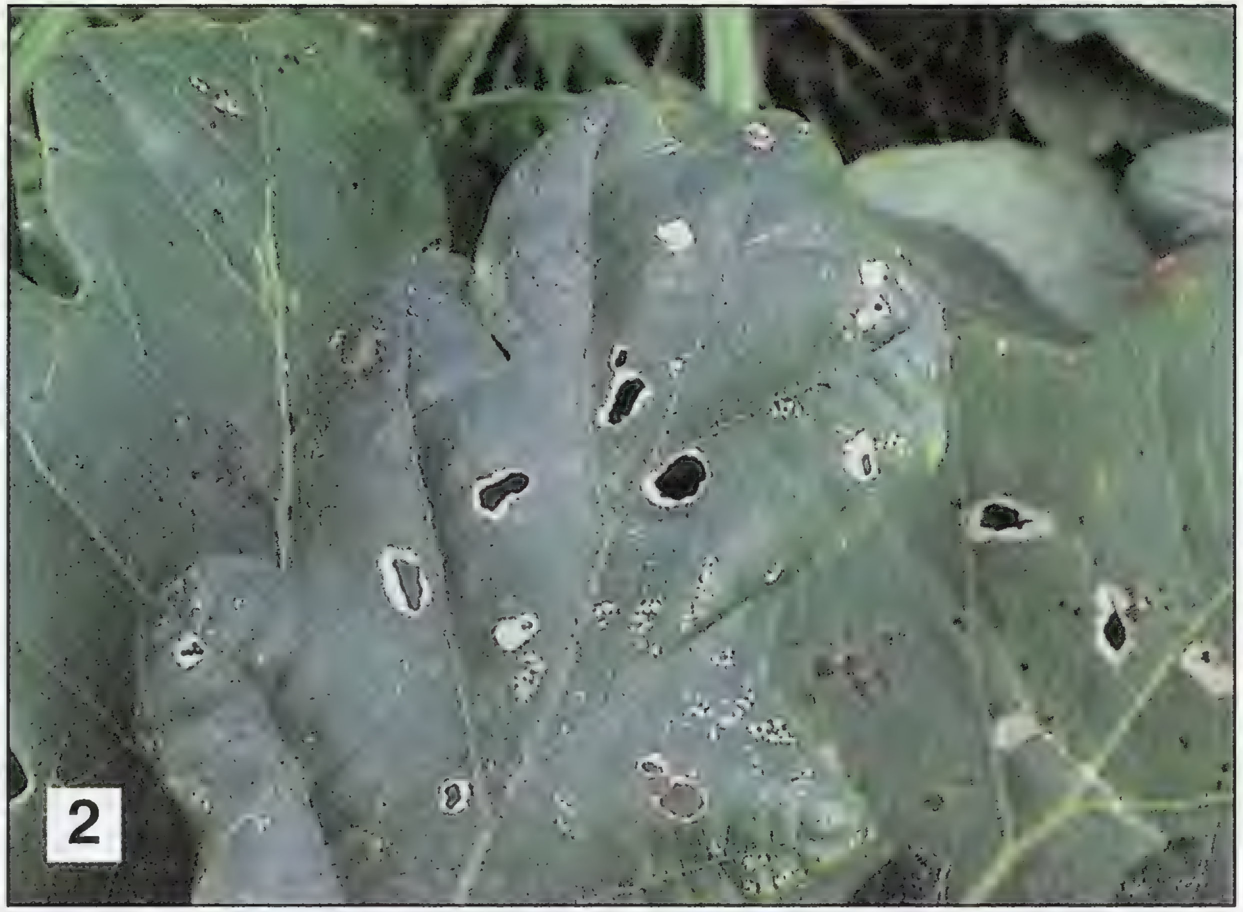
The larvae in Devon were discovered because they make what appear to be characteristic feeding signs until their penultimate and last instars. We cannot trace that these signs have been mentioned in the British literature, but Brooks (1991) describes the feeding of the closely related The Festoon *Apoda limacodes* (Hufnagel), whose foodplants are also oak and beech. She states that:

> *'The eggshell is not eaten. The larva rests on the underside of the leaf and feeds at the edge. Until it is about 5 mm long, the larva feeds only on the lower cuticle, leaving the upper cuticle intact. This produces a brown filigree pattern on the leaf. After this, it eats the whole substance of the leaf at the tip, feeding actively in sunshine. Due to the absence of prolegs, locomotion consists of a gliding motion with a slight side-to-side rocking. The ventral suckers adhere very firmly to a ribbon of silk which is laid down by the larva, and which in appearance resembles a slug trail ...'*

The text is accompanied by photographs of the ovum, larva, in several instars including the first, cocoon, pupa and adults. The slug-like trail which she describes as a ribbon of silk is visible in one of the photographs of the larva on an oak leaf.

From our observations the larva of *Heterogenea asella* feeds in a similar, but not identical, way. Like that of *A. limacodes*, before the penultimate and final instars the larva eats only small parts of the lower cuticle but, according to our observations and unlike that species, it does not feed at the edge of the leaf. Larvae between 2.5 to 3 mm in length feed by excavating an almost rectangular section about 1 mm × 2 mm. The larva makes no more than four or five excavations in any one area of a leaf, sometimes near to but never at the leaf edge, before moving to another part of that leaf to repeat the process. Usually there are no more than 10 groups of excavations on any one leaf, but one leaf which had





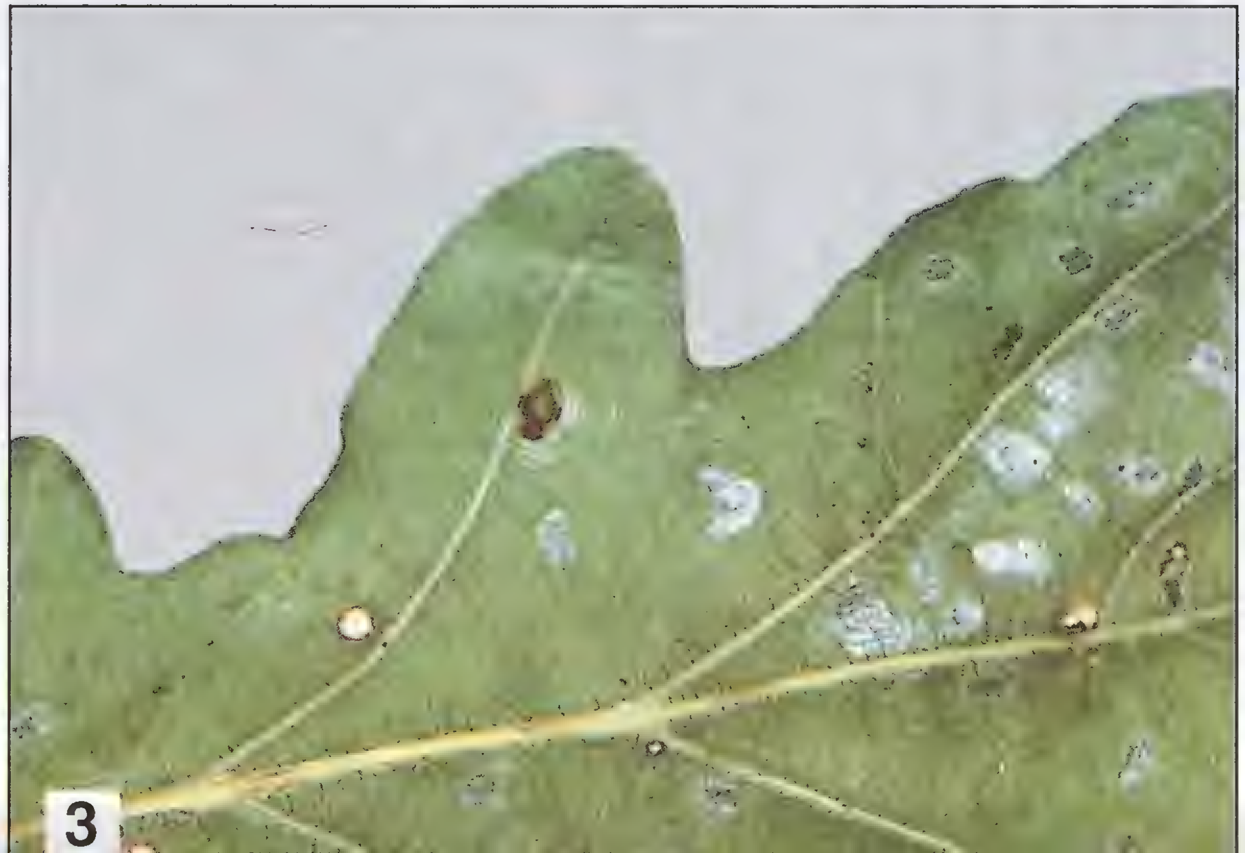


Plate 11. *Heterogenea asella* ([D. & S.], 1775).

Fig 1. Underside of leaf with early larval feeding signs, and larva. Photograph by J. M. Walters. Fig. 2. Upperside of leaf with later larval feeding signs. Photograph by J. M. Walters. Fig. 3. Underside of leaf showing whitish gloss, and larva.

been eaten by a larva about 3 mm in length had 40 groups of excavations. The remaining parts of the upper cuticle which have not been eaten are either pale green or greenish white (Plate 11, Fig. 1), and are quite noticeable when viewing leaves from the upperside, although Fig. 1 shows a leaf from the underside, with a small larva near some of the feeding signs. Indeed, it was these signs that first led RJH to investigate their cause, as in some ways they resembled early feedings of a *Coleophora* species.

As the larvae grew so did the size of the excavations, but none was more than 5 mm long. At this stage some of the excavations went through to the upper cuticle causing holes with part of the uneaten cuticle remaining (Plate 11, Fig. 2). In the penultimate and final instars the larvae ate complete sections of the leaf. The sections eaten were any part of the leaf including the edge, but, except in the final instar, the eaten sections did not cross the main veins and even in the final instar did not cross the midrib. In all instars the larva usually feeds on several leaves with the result that these have a pale green speckled appearance.

Epstein (1996) studied what he terms the limacodid group comprising seven families, including the Limacodidae, and records similar observations. He states that in early instar larvae of the Limacodidae leaf feeding is characterised by the consumption of mesophyll from one surface and that it is not until the third or fourth instars that the larvae feed on the entire leaf.

Larvae of various species, not only of Lepidoptera, feed by scraping away part of the lower cuticle of oak leaves, but there seem to be two main characters which distinguish the feedings of *H. asella*, although one of these also appears to be exhibited by *Apoda limacodes*. One is that feeding by other species usually results in the uneaten parts of the upper cuticle turning brown, but as already mentioned the early instar feeding of *H. asella* results in the uneaten parts becoming either pale green or greenish white. As already noted, Brooks (1991) records that until it is about 5 mm long the larva of *A. limacodes* feeds only on the lower cuticle, leaving the upper cuticle intact, but producing a brown filigree pattern on the leaf. The other is that the edge of the feeding usually betrays a slight whitish gloss caused by a substance produced by the larva which appears to help it adhere to the leaf. In fact quite often this whitish gloss remains as a trail showing the route taken by the larva (Plate 11, Fig. 3). This slight whitish gloss is a subtle character, but one which can be seen by turning the leaf to various angles of the light. The whitish substance did not look like silk to us as it was of uniform appearance and not made up of strands.

The larva has no prolegs. The thoracic legs are small; video footage taken by Mr J. M. Walters of one of the larvae indicates that they appear to have no role in keeping the larva on the leaf. Locomotion was seen to be by means of a wave-like movement of the undersurface of the larva. Observations of a larva on a glass slide showed that most of the ventral surface of the larva was against the glass with no apparent air gap although there were a few areas where there appeared to be an extremely thin layer of trapped air.

Epstein (1996) states that with larvae of the Limacodidae, a family with a worldwide distribution, and those of the Dalceridae, of the New World, he found a liquid on the ventral surface of the larvae which he considers to be, at least in part, semi-fluid silk. He records that this apparently sticky silk is dabbed on the substrate with a brush-like spinneret, sometimes in a figure of eight. Using scanning electron microscopy he found no secretory pores on the ventrum that could produce fluid. We studied the video footage taken by Mr J. M. Walters of *H. asella* larva on a glass slide, but we could not see any secretion from the mouth parts as it moved across the slide.

Epstein, Geertsema, Naumann & Tarmann (1998) state that the specialised ventrum of the larva enables it to adhere to foliage, 'often aided by semi-fluid silk or fluid secreted with the silk from the spinneret, which enhances surface tension.' Hasenfuss (1999), however, takes a slightly different view. He studied adhesive devices in larvae of 71 species of Lepidoptera. He describes the presence of a mobile lipid coating, at least 2 µm thick, on all cuticular surfaces. He states that the adhesive effect of a thin fluid film between two solid surfaces is due to 'capillary' or meniscus forces. The force of adhesion depends on the reciprocal of the distance between the surfaces. He explains that liquid lipids with comparatively low surface tension will work properly as adhesive fluids because plant leaves are covered by a 'wax layer' i.e. lipids with low surface tension. He describes how the fluid will rupture anywhere during detachment leaving tiny involatile droplets adhering to the substance which will remain liquid for months. He states that in *A. limacodes* the thoracic legs are reduced to small appendages, the prolegs are completely absent and the ventral surface of the abdomen is flattened to a very effective sole exhibiting close analogies to the sole of snails. He comments that in contrast to snails, the adhesive fluid is of a lipid nature.

We are confident that the whitish substance left behind on the oak leaf by *H. asella* larva is a thin layer of adhesive lipid secreted by the ventral surface of the larva. The larval shape gives a relatively large ventral surface area/mass ratio which aids the highly effective adhesion.

First instar

The impression given in the British literature is that the larva has the same general appearance in all instars, namely a green or yellowish green body with a broad reddish-brown or purplish-brown dorsal band broadening anteriorly and more so before the middle, giving the appearance of a rough cross or saddle, although sometimes most of the posterior area is reddish-brown or purplish-brown, and with not very obvious spines. From our observations, larvae that are between 2 and 3 mm long and in at least their second instar are often entirely pale green, sometimes with the area that will become the shape of the rough cross or saddle faintly outlined in pale brown, but as they grow this area becomes darker. The first instar, however, appears quite different.

The only accounts of the first instar of *H. asella* that we can trace in the British literature are those given by Standish (1876), Buckler (1888) and Tutt (1899). Standish obtained ova from a captive pairing of the species. He describes the resulting larvae on the first day of their emergence as 'whitish and very minute'; he was not able to provide them with food until their second day and records that he could not get any to feed. Buckler had ova supplied to him, which he kept in a chip box. He observed them changing colour immediately prior to the larvae emerging and says: '*At this critical moment, being otherwise engaged for some hours, I was unable to know that they were hatched and requiring food, though I was keeping them in a glass-topped box in order to observe the changes of colour. When I returned to them all were dead except one, a mere speck, which was slowly moving on the chip; one dead lay at the bottom of the box, and others I found dead, wedged into the junction of the box and its lid. As well as my strongest lens would show them to me, these very small specks of creatures were of an ovate roundish figure, dark brown above and pale greenish beneath, – in short, miniature representations, apparently, in all respects of the mature larva. The solitary living larva I placed on a leaf of beech, and put two other leaves over it, but on looking for it two days later was unable to see it, and concluded it had somehow escaped ...*'. Thus the impression given by Buckler is that, except for size, the first instar is the same as the others, but this is not so. Indeed this was partly recognised by Tutt (1899). He records that '*The* newly-hatched *larva, according to Buckler, is a mere speck, of a rounded ovate figure, dark brown above and pale greenish beneath, in short, a miniature representation, apparently, in all respects, of the mature larva*', but, in a separate paragraph and under a separate heading, he then goes on to consider the larval spines. We consider that it is worth quoting the whole of what he then says, as follows.

'*The newly-hatched larva appears to be very similar to that of* C. avellana *(*testudo*)* [now Apoda limacodes]. *The spines appear to be in precisely the same position as in that species,* i.e., *a double dorsal row with the alternate members absent, and a lateral series, with a more complicated arrangement on the thoracic segments. Possessing a series of specimens showing the different stages in the process of extrusion, it is equally clear, in fact quite certain, that the spines before hatching are invaginated into the interior of the larva, precisely as in* C. avellana, *and are extruded and assume their exterior position shortly after the larva leaves the eggshell, in the manner thus described in the case of the latter species. There is, however, a very important difference in the structure of the dorsal spines,* viz., *each one has two branches instead of being simple. As it evaginates at first a simple straight portion protrudes, but is seen to enclose not one but two terminal portions, the portions that from the first appear to be stiff and hardened; then the soft evaginating portion divides into an anterior and posterior horn, separating from each other at an angle of 80°-90°, and the hard terminal portions, at first parallel to each other, cross one another at an angle, and finally form the* *extremities of these two branches. There is in* C. avellana *a short process about half way up the soft (invaginated) portion of the spine, that seems to have no use or meaning, but is probably the representative of the second spine in* H. cruciata *(*asella*). The principal one of these, that is the longer and rather thicker one, inclines slightly backwards, and is altogether of a length about equal to 3/5 of the diameter of the larva, or about 0.13 mm. The shorter and rather more slender one, which might be regarded as a branch of the other, but which is more nearly equal than that description would imply, points decidedly forwards. The larger branch terminates in a three-spined point, and has several very minute points on its stem: the smaller one terminates usually in two points. The lateral spines appear to be simple (as regards branching), and expand terminally into a three-spiked coronet (Chapman).*'

Despite the detail recorded, no mention is made of the colour of the first instar larva. We have not been able to trace whether what Tutt says about the spines was taken from a publication by Dr T. A. Chapman or information which he gave Tutt.

On 11 August 2005, RJH found six larvae at Lower Hooksburry Wood. Four that were between 2.5 and 4 mm long had the typical appearance of the larvae illustrated by Buckler (1888) and Porter (1997), although the one that was 2.5 mm long was entirely pale green. Two others, both on the same oak leaf, were 1 mm long and were presumably first instar. They differed significantly from the other four. Confirmation that they were *H. asella* was provided a day or so later, when, after ecdysis, they took on the appearance of the other larvae. The following description was made by examining both those larvae under a microscope. Unfortunately, during the time of observation their heads were always retracted and so could not be described:

Body translucent whitish, with no indication of the rough cross or saddle that usually appears in the second instar, with creamy white contents, 10 pairs of erect spines on dorsum each branched from near base into two with a minute brownish bifurcate tip to each branch, remainder of body covered with unbranched setae each having a similar minute brownish bifurcate tip. The setae along the lower edge of the body are more or less at right angles to it. The appearance of the larva is like a minute sea-urchin. Following ecdysis, the 10 pairs of branched spines are lost and are replaced with unbranched firm black, or brownish black, spines which are not erect but are at an acute angle to the body with the two spines in each pair crossing each other. The unbranched setae of the first instar are not replaced, but the body is covered with what Buckler describes as pubescence and which in fact are minute spines. It then assumes the colour and markings described above on page 104.

Brooks (1991) has photographs of the first, penultimate and final instars of *A. limacodes*. She states that when newly hatched the head is black and the body white and spiny, and this account is clearly shown in the photograph, but after successive moults the body becomes greener and the spines shorter. Epstein (1996) notes that in the Limacodidae the first instar larvae usually differ from the later instars in the types of setae or in the degree of spinosity. He says that this is exemplified by species having late instars that are smooth-backed and non-urticating, and that these species have first instars with bisetose tubercles or warts which are lost in subsequent instars.

Other observations

On 23 and 24 August 2005, RJH observed two approximately half-grown larvae eat their shed skins following ecdysis. Both fed with their heads retracted beneath the thorax, clasping the old skin by using flaps on each side of the prothorax. The entire skin was consumed, including the dorsal spines. Epstein (1996) describes the same method of feeding, using flaps on each side of the prothorax, on leaves for middle to late instars of the Limacodidae.

There is the possibility that the female adults may use the same trees each year for egg-laying. RJH noted in successive years that larvae could always be found on certain trees, but other trees within no more than a 50 metre radius and with a similar aspect in the open apparently had no larvae. If this is not just coincidence then the question arises as to whether this is because the female usually does not leave the tree on which it developed from the egg or, if it does, whether some trees have attributes which others lack.

Tutt (1897) states that he knows nothing of the habits of the adult except that when breeding the species he found that they copulate at mid-day and fly about the breeding cage in the afternoon. It may be significant that in the same note he describes the female of *A. limacodes* as lethargic and falling down to the ground when disturbed by beating whilst the male 'flies wildly'.

Oates (2008) describes the use of certain trees by male Purple Emperor butterflies *Apatura iris* (L.) in mate-location strategies and concludes that the most favoured sites are those out of main air turbulence and that gaps in the canopy foliage density appear to be an important factor. Interestingly, he also reports that when a male searching for a female flushes out a mated female, she will drop like a stone to the ground. Newland (2009) states that the combination of shelter and canopy gap also seems to be important in the choice of sites by male Purple Hairstreak butterflies *Neozephyrus quercus* (L.). Although these observations are on the choice of sites for two butterfly species, they may be indicative that areas with gaps in the canopy have an important role for other Lepidoptera. Further, if females of *H. asella* readily drop to the ground in the same way that *A. limacodes* do according to Tutt or as mated females of *Apatura iris* do according to Oates, then the question is whether they then attempt to ascend by crawling up the trunk of a tree, or by flying. If they normally crawl then the chances are high that they will return to the tree from which they fell.

Where the cocoon is formed on the leaf, as recorded by Langmaid (2007), then a very limited dispersal may be possible due to wind action during the winter months.

Cocoon

Skinner (1985) states that the cocoon is described by Tutt (1899) as a quarter of an inch long, dark brown marbled with grey and it is either on a leaf or in the fork of a twig. Langmaid's observations refer to the cocoons being found on leaves and not on twigs (J. R. Langmaid, pers. comm.). Tutt's account appears to be based on Buckler (1873). Although a moth emerged from the cocoon described by Buckler, he does not state that the cocoon has a hinged lid at one end which opens on eclosion of the moth, and Tutt does not mention this either, but Skinner (1985) does in his account of the Limacodidae.

On eclosion the pale yellowish brown exuviae are partially extruded from the cocoon, but this is not mentioned in any of the above publications, nor can we trace any reference to this in the British literature. Porter (1997) states that the cocoons of *A. limacodes* and *H. asella* are boat-shaped, but according to our observations the cocoon of *H. asella* is oval-elliptical. SDB was able to observe the cocoon formation over a twelve hour period on 28 September 2005, making detailed notes at least every 30 minutes and often more frequently than that. The following is a summary.

Almost at the outset the larva lost the definition of markings and during most of the time whilst it was visible the larva was 'hunched up' with the head tucked down. The dorsal vessel pulsated very frequently. For approximately the first five and a half hours the larva produced silk intermittently, often in short bursts of activity, but without forming a cocoon. During this time the larva rotated its position several times and occasionally raised itself up to produce silk. After about five and a half hours the larva began a period of intense activity starting by backing under some of the silk already produced and then spinning more silk so as to eventually enclosed itself completely, but larval activity was still discernable through the cocoon as it was being formed. On occasions it was clear that the larva was lying on its dorsum, producing silk. At one point the larva moved through a vertical, lateral and horizontal position in one minute. Rotational movement within the cocoon continued periodically. This activity seemed to be completed when the larva eventually ended up on its dorsum, with a hole visible at the head position, although this eventually became covered over leaving an indentation indicating the final position of the head. About eight hours after observations commenced the cocoon was fully formed. In the final three hours of observation the cocoon gradually became chalky white/grey and pitted overall.

Foodplants and phenology

Before 2006, the main known foodplants in England were oak and beech, but now sweet chestnut and small-leaved lime must be added (Langmaid, 2007). There is the possibility that on at least one occasion larvae have been found on birch *Betula* sp., because Fletcher (1880-81) comments that a few larvae were 'taken' off oak and birch in September. Fletcher was an accurate observer and so his reference to birch must be correct unless he had written 'beech' and an editorial or typographical error changed this to 'birch'.

There is also a curious record from poplar, *Populus* sp. At least two 'quite large' larvae were found feeding on the leaves sometime between 1929 and 1931 at Seaford, Sussex (VC 14), which is on the coast (Lanktree, 1960). The exact date and year is not known. Lanktree states that '*Although the year is no longer certain (part of each of the summers mentioned was spent in this locality, but no contemporaneously written account exists now), the month was almost certainly July; it so happens it could not have been later in any case, and it is very unlikely to have been any earlier.*' He notes that although they were fed for some weeks on poplar they failed to survive. It is not clear whether he means that they died before pupation or that they pupated but moths did not emerge. He also records that when he found the larvae he was 'rather young, but well enough acquainted with South's works'. Although the species is not known to be migratory, he wonders if the larvae could have been the progeny of a female of continental European origin. Even if it was not until the end of July that larvae were found, in our experience it is surprising that at such a date they were 'quite large'.

According to genealogical records, Lanktree was born on 16 June 1919 in Malaysia and arrived in Britain, aged 11 months, on 31 May 1920 on the board the *SS Mentor*. He died on 18 June 1975 at Kitchener, Ontario, Canada. Thus, in July 1929 he was 10 years old and in July 1931 was 12, and so would indeed have been 'rather young' as mentioned in his account. Bearing in mind that at the time they were found Lanktree was no more than 12 years old, probably had not previously found undoubted larvae of the species, apparently relied on what would have been a monochrome plate of the larva in an edition of South's *The Moths of the British Isles* and by the time that he published the record, some 30 years later, no contemporaneous written account existed, it would be understandable if some mistake had arisen.

Hewett (1893) found about 20 larvae in October, but we found larvae from 4 August to about the third week in September. A sample from two small areas over two years, 2004 and 2005, may not be representative for other parts of England, but if it is then it appears that the larval stage may cease a few weeks earlier than about 100 years ago.

Parasitoids

On 19 and 20 August 2004 RJH found one 2.5 mm long larva on each day from each of which a parasitoid larva emerged two days after collecting; both spun cocoons. An adult parasitoid emerged on 31 August 2004 from the larva collected on the first date. The second parasitoid died during emergence and was noticed a few days after 31 August 2004. The specimen that emerged is a female *Dolicogenidea* (or *Apanteles*) *lacteicolor* (Viereck) (Hymenoptera: Braconidae, Microgastrinae) (det. M. R. Shaw), and it is likely that the other is conspecific. It is an interesting species because it was imported into North America to control *Euproctis chrysorrhoea* (L.). According to M. R. Shaw (pers. comm.) the host range is that of very early instars of hairy or at least pubescent larvae on trees/bushes, and it is known from Lasiocampidae (*Malacosoma*), Lymantriidae, Arctiidae (*Spilosoma, Hyphantria*), Nolidae, Noctuidae (*Acronicta*) and now Limacodidae.

Three of the larvae collected on 11 September 2004 produced parasitoid larvae that all made cocoons between 22 and 25 September 2004; adults did not emerge until the following year. These were all *Phobocampe alticollis* (Thomson) (Hymenoptera: Ichneumonidae, Campopleginae) (det. K. Horstmann), which has also been reared from *Apodes limacodes* from Berkshire, Essex and The Netherlands (M. R. Shaw, pers. comm.). Adults have emerged in March and April under outdoor temperature conditions (M. R. Shaw, pers. comm.), which might suggest that it needs to use other hosts early in spring.

Whilst we were searching for larvae we noticed adult parasitoids crawling over the leaves. As the larvae sit exposed on the leaves they must be an easy target for parasitoids. If this percentage of parasitism is typical, then this may be a significant factor in the scarcity of this species in the British Isles.

For this reason when RJH found larvae again in 2005 at two localities he collected several in order to observe the extent of the parasitism with the intention to return either the resulting cocoons or moths to their places of origin. In fact this was not possible because all the larvae collected produced parasitoids. Seven male and nine female *Apanteles lacteicolor* were reared from larvae collected at Lower Hooksburry Wood and one male of the same species was reared from a larva from Dewarstone Wood.

Acknowledgements

We are very grateful to Mr J. M. Walters (Buckfastleigh) both for filming the locomotion of the larva and also allowing us to use his photographs of the larval feeding signs (Plate 11, Figs 1 & 2). We thank Professor Dr K. Horstmann (Würzburg) for determining *Phobocampe alticollis*, Dr M. R. Shaw (National Museums of Scotland, Edinburgh) both for identifying *Apanteles lacteicolor* and providing information, including some unpublished, about both species of parasitoids and Dr W. G. Tremewan (Truro) for providing us with copies of certain papers.

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Ectoedemia longicaudella Klimesch, 1953 (Lep.: Nepticulidae) new to Britain

On 12 July 2009, I ran two MV moth traps at Shabbington Wood, part of the Bernwood Forest complex in west Buckinghamshire, vice county 24. The area selected was predominantly oak. It was a reasonable trapping night with 119 species being recorded, the last of which proved to be a species new to Britain. Two moths were trapped of this species and were duly dissected and slides and photographs made of the genitalia. I sent the images to David Manning for comment. The moth itself looked most like *Ectoedemia atrifrontella*, but the genitalia did not quite fit. David thought it may be *E. longicaudella* and so I sent the image off to John Langmaid for his thoughts who in turn sent it off to Erik van Nieukerken. All three agreed that it was indeed *E. longicaudella.*

The adult insect is illustrated by Johansson *et al* (1990. The Nepticulidae and Opostegidae (Lepidoptera) of North West Europe. *Fauna Entomologica Scandinavica* **23** (1) – 2 volumes). The adults and the genitalia of both species are illustrated in Bengtffon & Palmqvist (2008. *Nationalnyckeln till Sverviges flora och fauna. Fjärilae: Käkmalar - säckstinnare (Lepidoptera: Micropterigidae - Psychidae).* Art Databanken, Slu, Uppsala). Both *E. atrifrontella* and *E. longicaudella* produce bark mines on oak and can be most easily be spotted on younger trees before the bark becomes ridged. The mines are identical. This means that it is not possible to identify *E. atrifrontella* from mines alone and previous records must now be in doubt. *Ectoedemia longicaudella* is present as far north as southern Norway and Sweden and is widespread across central and southern Europe and its discovery in central England must infer that it may have been present here for some time and simply overlooked.

The most obvious difference between the genitalia of *E atrifrontella* and *E. longicaudella* are the much longer transtillae in the latter.

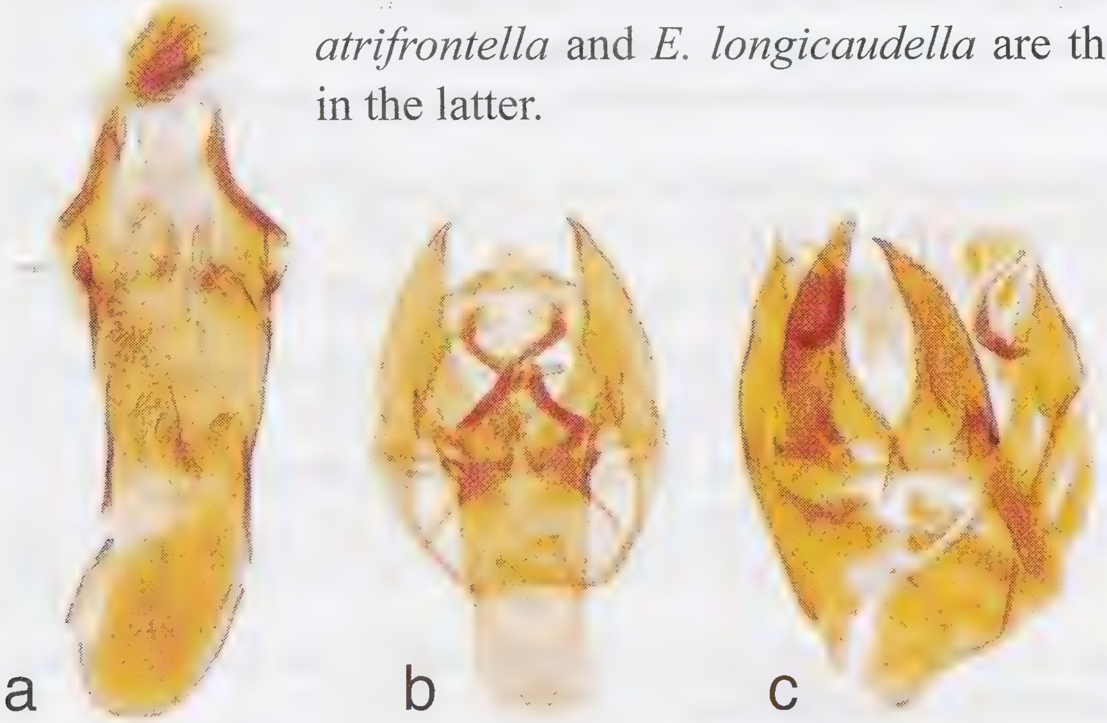

Figure 1. Genitalia of *Ectoedemia longicaudella* Klim. Burnwood Forest, Buckinghamshire, 12.vii.2009, leg. P. Hall. a: adaeagus from moth 1; b: complete genitalia of moth 2; c: genital capsule (adaeagus removed) of moth 1.

I propose that this moth be given the Bradley and Fletcher number of 41b.

My thanks go to David Manning for pointing me in the right direction on this difficult group and to John Langmaid and Erik van Nieukerken for their confirmation.— PETER HALL, Melanthia, Chiltern Road, Ballinger Common, Bucks HP16 9LH (E-mail: bucks.moths@virgin.net).

PONERA TESTACEA (EMERY, 1895) (HYM.: FORMICIDAE) NEW TO BRITAIN FROM DUNGENESS, EAST KENT

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Abstract

Ponera testacea (Emery) (Hymenoptera: Formicidae) is recorded from Britain for the first time. Its determination by morphology and morphometrics from specimens collected at Dungeness, East Kent is discussed and its currently known European status is summarised.

Keywords: *Ponera testacea*, Britain, East Kent, Dungeness, morphometrics.

Introduction

The ant *Ponera testacea* (Emery), is recorded for the first time in Britain from Dungeness, East Kent. Previously regarded as a variety of *P. coarctata* (Latreille, 1802), but raised to species level by Csosz & Seifert (2003), it is distinguished from its sibling species on good morphometric and morphological characters. *P. coarctata* is well-established as a British species, being first recorded in the mid-nineteenth century in London (Donisthorpe, 1927). It occurs sporadically across southern England and Wales, where it is considered at the northern limit of its range, and is classified as Nationally Notable (Nb) (Edwards and Roy, 2009). It favours a wide variety of nesting sites, as long as warmth and humidity are present, and tolerates partial shade (Falk, 1991). *P. testacea* in contrast occurs in xerothermic, sparsely-vegetated habitats, apparently avoiding more humid sites such as open xerothermic woodland (Csosz and Seifert, 2003). It is abundant in the Mediterranean region (recorded from Spain, Portugal, Italy, S. France) and ranges into central and SE Europe (Austria, Bulgaria, Croatia, Germany, Hungary, Romania, Serbia, Switzerland), north to 52° in Germany (Csosz and Seifert, 2003; Seifert, 2007). In NW Europe, records are scarce, and Dungeness represents a significant addition to its recorded distribution. The nearest continental sites are in the Namur Province of Belgium, 50.5° N, where it was first recorded by Bondroit as *P. coarctata* var. *testacea* in the Meuse valley in 1918 (specimens now lost), and more recently from the Lesse Valley, where a single *P. testacea* worker was taken in 2005 by J.-Y. Baugnée, under a large stone in calcareous grassland. It is not recorded from the Netherlands or northern France (Dekoninck *et. al.*, 2006, F. Vankerkhoven, pers. comm.). The number of recorded localities may well now increase as a result of greater attention from collectors, so more clearly defining the geographical range.

Material and Methods

Invertebrate specimens were collected in pitfall and water traps set out at various locations across the Dungeness shingle habitat in East Kent in 2007 and 2008, by AG. Ants were separated and collated from the samples, and sent in part to CAC for determination. CAC sent on some of the specimens to PJA for general examination and comment. It was noticed that among these specimens were two *Ponera* males in alcohol, provisionally determined *P. coarctata*. One male had sparse, short head hairs (the other specimen was missing its head), contrasting with the usual longer, more abundant hairs of *coarctata*. The only other published character differences between the males of the two species are average body length (*testacea* < 3.00mm < *coarctata*), and robustness of the alitrunk profile (less robust in *testacea*), (Csosz and Seifert, 2003). The female castes are essential for specific determination. Found loose in the same tube was the detached head of a *Ponera* worker. This head had the brownish-yellow colour of *testacea*, rather than the dark brown of *coarctata*, and measurements of head width, head length and calculated cephalic size (CW, CL and CS, as per Csosz & Seifert, 2003) put it well within the range for *testacea,* not *coarctata*. These very suggestive indications made it necessary to study any whole *Ponera* workers, or females, in the Dungeness samples to see whether *testacea* characters were present.

CAC identified two worker specimens (01 and 02) with the most diagnostic morphological characters of *testacea.* These include the shape and form of the petiole and lateral alitrunk, and overall colour. The petiole profile of *testacea* is lower and thicker than that of *coarctata*, and the bilateral subpetiolar process has a distinct tooth-like posterior projection, absent or at best rudimentary in *coarctata.* The circular thin spot ('fenestrum') at the anterior end of the subpetiolar process is relatively larger in *testacea* than *coarctata*. Alitrunk profile is lower than in *coarctata*, and the suture between the mesonotum and mesopleuron, clearly visible in *coarctata*, is faint or apparently absent in *testacea.* Colour is variable, but tends to be lighter in *testacea*, more yellowish-brown or brownish-yellow than the more uniformly dark brown of *coarctata.* Plate 12, Figs 1 to 4 show views of one of the Dungeness workers (specimen 01) which illustrate these features, compared to the same views in Plate 12, Figs 5 to 8, of a worker *P. coarctata* taken by PJA at Boreham Wood (Hertfordshire, U.K.), in 1976. Other characters are given in the descriptions of Csosz and Seifert, (2003).

Morphological indications alone are not decisive in species pairs such as this, and PJA undertook further examination, morphometric analysis of diagnostic characters, and photography of the specimens. Measurements of characters with high diagnostic value, according to Csosz and Seifert (2003), were made with a stereomicroscope fitted with an X-Y stage, moved by calibrated micrometers with digital displays, and with resolutions of 1µm. Correctly-aligned specimens were thus moved under an eyepiece fitted with a cross-wire graticule as a reference marker, and the micrometer readings recorded. Character measurements were

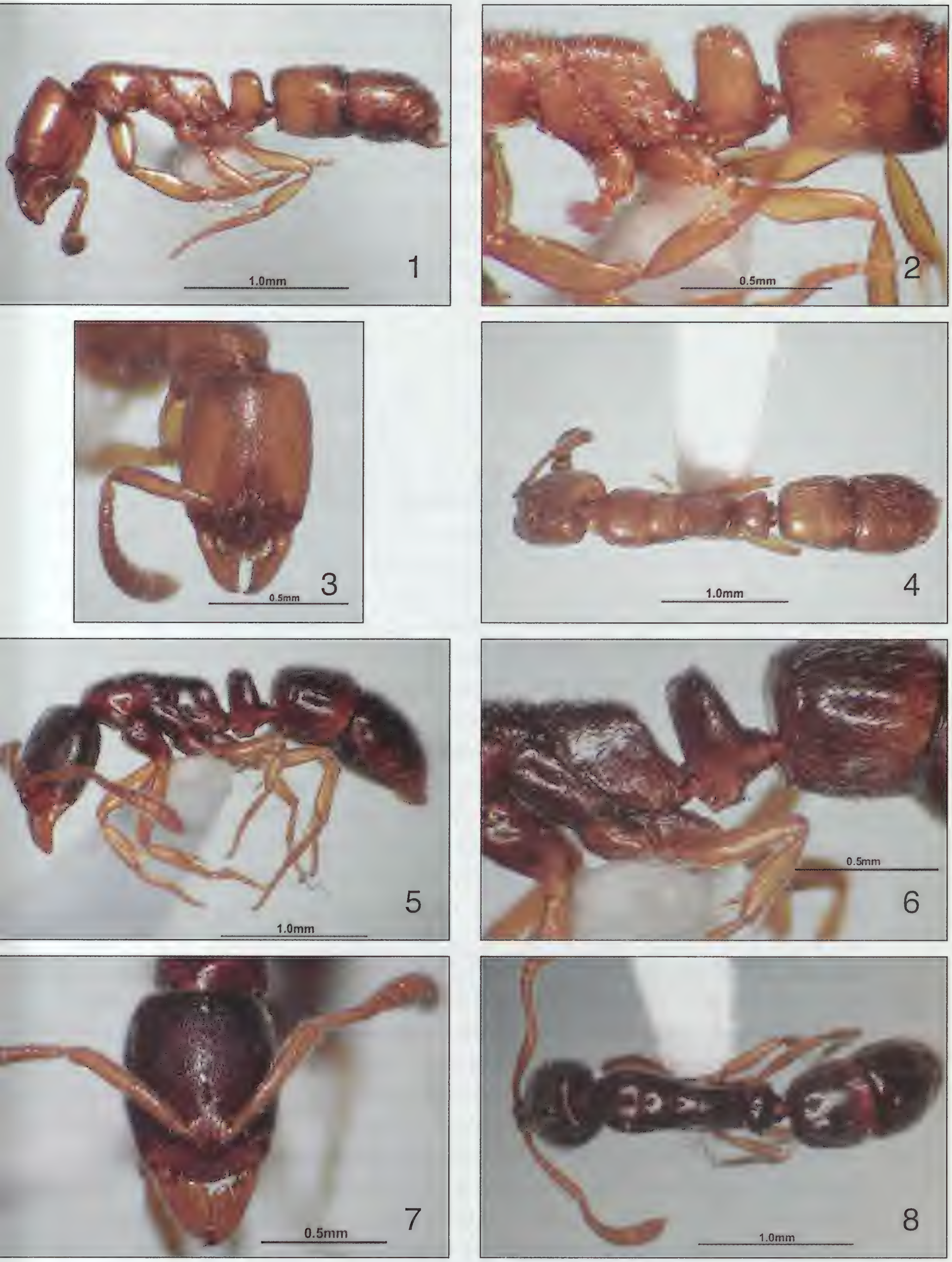


Plate 12, Morphology of *Ponera* species. 1-4: *Ponera testacea* (Dungeness); 5-8: *Ponera coarctata* (Hertfordshire). See text for details.

made at ×90 and ×135 magnifications. The need for an optical (eyepiece) micrometer requiring calibration at varying magnifications was obviated by this method. The locations of the petiole measurements PH and PL (petiole height and length respectively) are shown in Figure 1, (extracted from Csosz and Seifert, 2003). Specimens were photographed with a Canon Powershot digital camera, coupled with a Meiji adapter. Helicon Focus and Microsoft Digital Image Professional software were used to focus and process the images. Specimens 01 and 02 were then sent to Dr Bernhard Seifert for confirmation. A third specimen (03) was later identified among the Dungeness samples and analysed in the same way, but not sent to Dr Seifert.

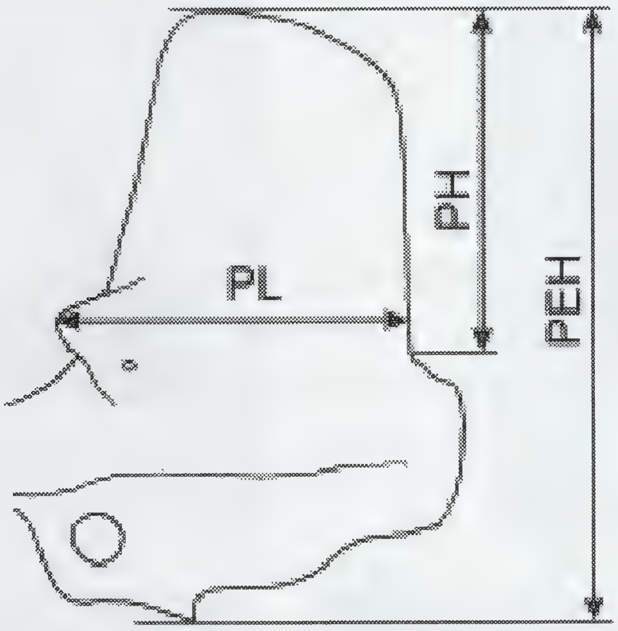


Figure 1. *Ponera testacea* petiole profile, showing measurement of PL and PH. Reproduced from Csosz and Seifert (2003).

Results

Table 1 shows values for each worker specimen for all measured characters and calculated indices. Parameters given the highest diagnostic ratings by Csosz and Seifert are indicated by three asterisks. Csosz and Seifert's values for the index CS × (PH/PL) for *testacea* and *coarctata* are also shown for comparison. All parameters show clear agreement with a diagnosis of *Ponera testacea*, confirming the morphological indications. A parameter derived by Seifert, FoDG (mean distance of foveolae on dorsum of 1st gaster tergite), also given high diagnostic value, was measured separately for specimens 01 and 02 by Dr Seifert himself, along with seven other characters. He reported that both specimens were 'safely determined as *Ponera testacea*, with p=1.000', (Seifert, 2009, pers. comm.).

The data from the eight characters for each specimen measured by Dr Seifert, together with similar data from samples of *testacea* and *coarctata* from several European countries, were subjected by him to principal component (PCA) and discriminant (DA) analyses. These two analytical approaches are plotted against each other in Figure 2, which is reproduced here with his kind permission. The Dungeness specimens are represented by the two red rhombs, grouped well within the cluster of yellow rhombs of the European *testacea*, which are clearly separated

SOCIETY MATTERS

AES NEWSLETTER

We are currently reviewing the AES Wants & Exchange List and exploring how this could be improved to provide more value to members. More information will be made available in future issues of the Bulletin, and it is hoped to pilot the new service before the end of the year. We aim to implement the improvements without in any way affecting subscription rates.

A SNIPPET FROM AES HISTORY

The first AES Wants & Exchange List was produced in July 1948, in order 'to increase the space in the Bulletin for articles and other matter (sic) of permanent interest...' The first editor of the new Wants & Exchange List was Ernest Lewis, of Parry Road, London SE25, and 'Advertisements of articles offered for sale will be accepted on payment of a fee of 1/-, and provided that their inclusion will not involve the withholding of exchange notices'. There was only one 'for sale' advertisement in that first list – for a 'type collection' of British Lepidoptera contained in a five drawer cabinet, advertised by W.E. Collison (member number 247).

An announcement in the List forewarned that '...Mr B.A. Cooper will broadcast on "Butterfly Migration" in the "Countrylover" programme, in the Midland Home Service (296.2 m.) at 7 p.m. on Thursday, 15th July.' This was a radio programme - it was of course only in the years following 1948 that television began to become generally available to British households.

A scanned copy of the July 1948 Wants & Exchange List is available in the Members' section of the AES website.

FORTHCOMING AES EVENTS

Saturday 26th June: A visit to Horsenden Hill

This event will involve looking for butterflies on Horsenden Hill, including the White-letter hairstreak, and examining moths caught in the previous night's moth trap. Meet 10.00 Horsenden Farm (TQ163840). This is a joint event with Butterfly Conservation and the London Natural History Society and will be led by AES member David Howdon (email: davidhowdon@yahoo.co.uk; tel: 020 8426 6621). The event is free of charge but booking is necessary.

Saturday 26th June: Joint event, AES & Bug Club and the British Entomological & Natural History Society

The Pelham-Clinton Building, Dinton Pastures Country Park, Davis Street, Hurst,
Reading, Berkshire RG10 0TH

The day will start at 10am, examining the moth trap catch from the previous night, followed by a talk about the park and the BENHS collections and library.

After lunch (at the on-site cafeteria, or bring a packed lunch) there will be a field trip / bug hunt to sample insects at Dinton Pastures Country Park, followed by reviewing the day's discoveries and using the BENHS facilities to identify insects.

Saturday 3rd July, 12:00 – 4:00 pm

AES & Bug Club 75th Anniversary Garden Party

Colin Hart, Chair of the AES Council, invites members to join us at a garden party at his home in Buckland (near Reigate), Surrey. This will be similar to the party held 25 years ago on the Golden Jubilee of the Society.

Owing to space constraints the numbers are limited to up to 50 people. Members can bring one guest and a charge of around £18 per person is likely. Early booking is advised – first come, first served! To book your place please email secretary@amentsoc.org (or telephone 07733 444 731) or write to AES Garden Party, PO Box 8774, London SW7 5ZG.

OUTREACH EVENTS during the summer

The Society also plans to attend the following events, among others, in order to publicise the society and entomology in general.

Saturday 5th June

Springwatch Festival 'Wild Day Out'. We will be at the main London event in Alexandra Palace Park, Haringey as well as in Stroud, Gloucestershire (Mike McCrea, in Stratford Park, Stroud, which by coincidence is also celebrating its 75th anniversary this year)

Sunday 20th June 2010 (Father's Day)

Wildlife Aid Open Day

Wildlife Aid, Randalls Farmhouse, Randalls Road, Leatherhead, Surrey

10:00 am – 4:00 pm

Sunday 27th June: Osterley Day

Osterley Park & Gardens, Isleworth, Middlesex TW7 4RB

Sunday 4th July: 'Go Green at Gatton'

Gatton Park, Reigate, Surrey, RH2 0TW (1:00 – 5:00 pm)

Thursday 5th August

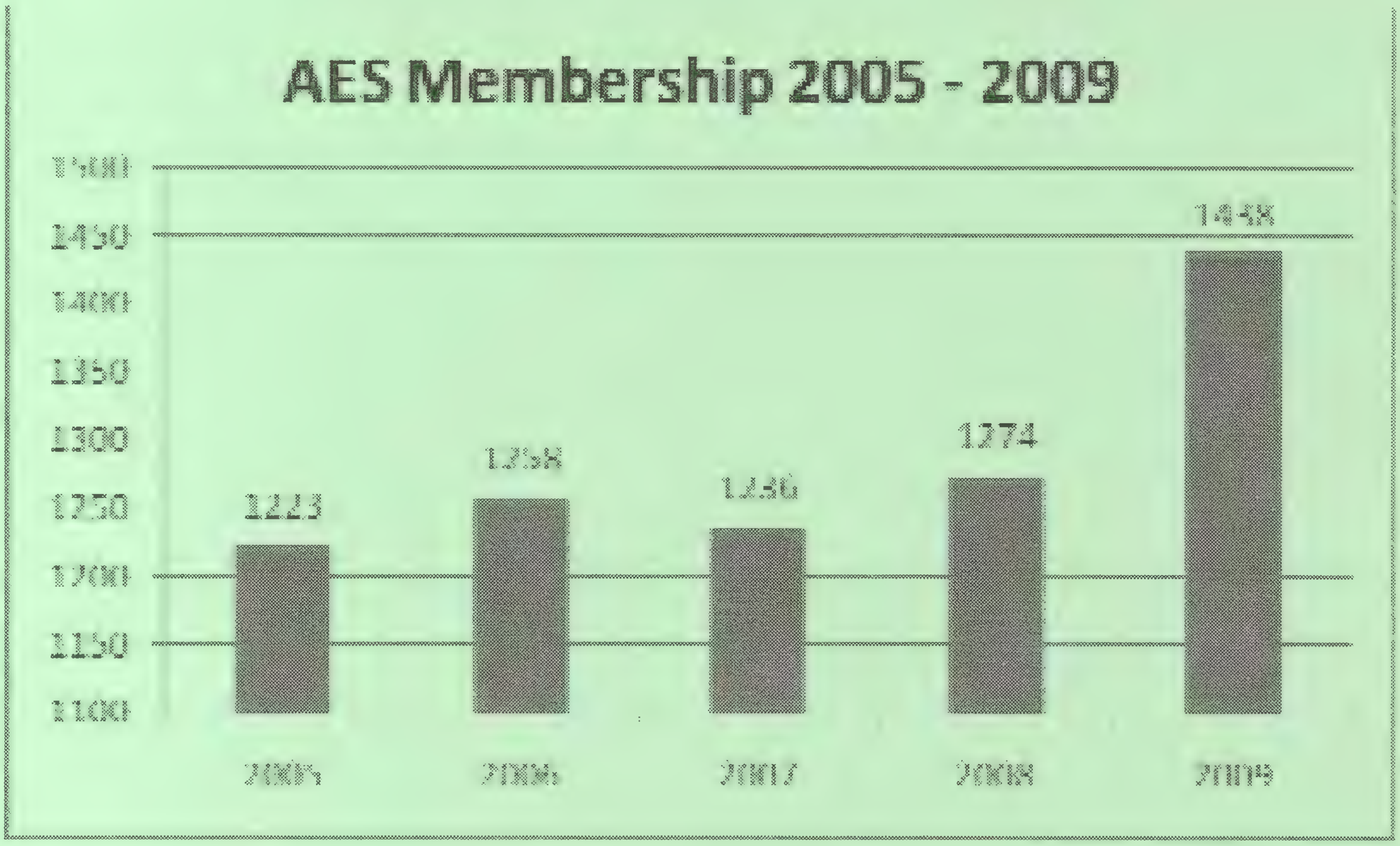
Family Insect Day at Osterley Park & Gardens, Isleworth, Middlesex TW7 4RB (Dave Hodges)

AES ANNUAL REPORT
FOR THE YEAR ENDED 31st DECEMBER 2009

MEMBERSHIP

Total membership of the Society at 31st December 2009 was 1438, an increase of 164 over the previous year's total (see Fig).

Part of the increase in membership numbers is accounted for by subscribers to the Entomologist's Record, which became an AES periodical in 2009. (The increase is less marked than some might expect due to the fact that many members subscribe to both publications).



CONSERVATION

The Society continues to participate in appropriate conservation bodies, including Invertebrate Link, on which body our Conservation Secretary, Dr David Lonsdale, is a member of the Executive. David Lonsdale drafted the revised InvLink paper 'Insect translocation – a code of conservation practice'. Dafydd Lewis attended a Board meeting of Buglife - the Invertebrate Conservation Trust, as an observer.

The Society's conservation newsletter Invertebrate Conservation News is now in its 40th year, and has been edited for most of that time by David Lonsdale, who this year received the Marsh Award for Insect Conservation by the Royal Entomological Society. In September an AES poster was presented at the Royal Entomological Society's special interest group meeting on the importance of gardens for insect conservation. Copies of the poster are available on our website, or as hard copy on request to the Secretary.

PUBLICATIONS

We assumed responsibility for the bimonthly Entomologist's Record and Journal of Variation from January 2009, and the number of Entomologist's Record recipients increased by 33% over the year. Many members subscribe to both this journal and to the bimonthly AES Bulletin. Invertebrate Conservation News was published three times during 2009. We were able to produce every issue of the bimonthly Bug Club Magazine in full colour, thanks to our affiliation with the RES.

EVENTS

Fifteen events for members and others were held during 2009, at locations ranging from Liverpool to London. Some of these were collaborative events with our affiliates and some were organized by non-council members, which is a development to be encouraged. Further such events are planned for 2010, which marks the 75th anniversary of the Society. We also attended six outreach events during the year. Our 2009 Members' Day and AGM was held at the Cambridge University Zoology Museum and was dedicated to the memory of Michael Majerus, AES President 2005-2009. Our autumn visits to the Oxford University Museum of Natural History became a permanent annual fixture in 2009.

DEVELOPMENT, PUBLICITY & AFFILIATIONS

Our affiliation with the Royal Entomological Society was extended to include a partnership effective 1st January 2009 involving the management of the AES Bug Club, which has been renamed 'The Bug Club'. Copies of the Letter of Affiliation with the Conchological Society of Great Britain and Ireland were signed at that society's January meeting by their President, Julia Nunn, and by the AES Hon Secretary. Bug Clubber Theo Tamblyn was in attendance and had brought with him numerous shells to have their identification confirmed.

Two Bug Clubbers, Sam Baylis aged 13 and Rachel McLeod aged 9, addressed the Quekett Microscopical Club at their Young Scientists meeting in February. This event was attended by some 50 people including AES members and was deemed to be so successful that the Quekett are considering making it an annual event. A joint AES/Quekett meeting was held in June, at the Museum. These affiliations extend the opportunities open to members to engage with invertebrates and provide new perspectives for the membership of all affiliates.

The Society received a grant of £800 from the OPAL Project during the year, towards the cost of IT equipment and publicity materials; and we received £1000 from the WF Southall Trust to fund a wildlife garden and moth trap.

AWARDS

The Hammond Award [Best contribution to the AES Bulletin during 2009] was awarded to Peter Holland, for his articles on Emma Hutchinson.

The Gardiner Award [Best Bug Club Magazine article] was awarded as follows.

Under 9 age group: First Prize Winner: Magnus McLeod (aged 4½). Highly Commended: Sophie Brown (aged 5).

9-13 age group: First Prize Winner: Rachel McLeod. Highly Commended: Matthew Sutton; Adila Stratford; Bethany Wildash.

14-17 age group: First Prize Winner: Joe Robertson.

The Bradford Award [Best exhibit from an adult member at the Kempton exhibition] This was awarded to David Oram. The following were Highly Commended for their exhibit: Henry Berman, and Alan Rix of the British Plant Gall Society.

The Ansorge Bequest [Best exhibit by younger members at the Kempton Exhibition]: First Prize Winner was Theo Hamblyn, for his exhibit on phorid flies. This was a remarkable year and the judges had difficulty in choosing prize-winners among the very high standard of all exhibits. It was decided to award Highly Commended awards to the following: Isabella Baylis; Sam Baylis; Jody Holland; David May; Rachel McLeod; Daniel Osmond.

Cribb Award: There were no nominations for the Cribb Award during 2009.

Entomological Grant Scheme: It was decided to terminate the existing AES Grant Scheme in 2009. The scheme will be replaced in 2010 with a new grant scheme, to be known as the Michael Majerus Grant.

GOVERNANCE

AES President Michael Majerus died in January at the age of 54 years. The Society was represented at the funeral by Brian Gardiner, Nick Holford, Martin Hough and Malcolm Simpson, all of whom have a long history with the Society. Martin Hough and Mike Majerus were on Council together in 1969, when Mike was a junior representative; and Mike had said that it was Brian who put him on the road to his entomological career, when he was a junior member of the Society. At the AGM in April Dr Robin Wootton was elected as President for 2009-2010.

The AES Council met on four occasions in 2008 at the rooms of the Ethical Society in Conway Hall, Bloomsbury. Dafydd Lewis (Hon Secretary) who has acted as Registrar since October 2008 formally assumed the role of Registrar on 1st November 2009.

The Governance and the Development and Fundraising Committees became permanent committees reporting to Council during the year.

Two new Council members were elected at the 2009 AGM: Colin Plant, Editor of the Entomologist's Record, and Mr David Tatham, who has valuable experience in dealing with fundraising and charitable trusts.

The following retire from Council by rotation at this meeting and have expressed their willingness to remain on Council if nominated and duly elected: Colin Hart; Martin Hough; Jacqueline Ruffle; Phil Wilkins. Miss Kara Majerus was co-opted as a member of Council at our December meeting and is therefore subject to election at the AGM. The AES Council nominee for AES President, 2009-10 is our current president, Robin Wootton.

DEATHS

Finally, it was with great regret that we received notice of the deaths during 2009 of the following members of the Society:

Professor Michael Majerus (4027).   Mr J E Wilson (5272).

Dafydd Lewis, Hon Secretary
5 March 2010

TREASURER'S REPORT FOR THE YEAR ENDING 31ST DECEMBER 2009

It was predicted last year that the General Fund would make a loss during 2009 in view of our commencing publication of the Entomologist's Record, and so it is not a surprise to have to report that indeed the General Fund did make a loss, in the sum of £1435 for the year. However, this is less that was envisaged and it is encouraging to see that subscriptions for the Entomologist's Record are continuing to increase. We must anticipate losses in the next year or two as a result of the steps necessary to improve that journal and thereby increase readership. It is hoped that the current low levels of investment income will start to improve in the near future. The Bug Club was jointly funded by the RES for the first time this year and this has enabled us to make improvements to the Bug Club Magazine and run more Bug Club events. RES funding in 2010 will be at the same level as in 2009. The Society received a grant of £800 from the OPAL Project during the year, towards the cost of IT equipment and publicity materials, the sum of £1000 from the W F Southall Trust to fund a wildlife garden and moth trap, and in excess of £2000 was donated to the society in memory of the late Mike Majerus.

As a result of the continuing downturn in worldwide investment markets, the Crow and Hammond Fund has seen a lower investment income than previously, but an increase in capital values has resulted in this fund returning to a profit, although levels are still lower than a few years ago. I am hopeful that these investments will continue to return to their former level within the reasonably near future. Monies from the fund were also used for promotional purposes and awards.

As a result of the investment losses in financial markets, the Ansorge Fund, used to make awards to juniors, again made a loss in 2009, being only the third time in many years. Again, it is hoped that this losses in capital value and drop in income will only be temporary. Awards totalling £180 were made to juniors.

The Publications Fund has once again made a good profit of £3208, albeit lower than in 2008. As usual, this will be used to fund future publications. No new books were published in 2009, but some are nearing completion and should be ready in 2010.

Peter May, Hon Treasurer.
5 March 2010

AES CONSERVATION REPORT FOR 2009

The AES Conservation Committee

The Committee continued its work with only four members (i.e. the two undersigned, together with Phil Wilkins and Peter May) and remained in need of a new AES Habitat Conservation Officer. Anyone with an interest in promoting the conservation work of the Society would therefore be welcome as a prospective committee member.

National and international representation

In 2009, there were no further announcements regarding the fifth quinquennial Review of the listing of species for legal protection in the UK but a final consultation began early in 2010, after the period covered by this report. Invertebrate Link (InvLink) again expressed concern about the failure of the UK's statutory conservation agencies to continue employing invertebrate specialists in adequate numbers. This deficiency is causing problems for various invertebrate conservation activities, including the review of legally protected species and the development of action plans for other "species of conservation concern".

The invertebrate specialists who are still in UK government employment have helped to ensure that national anti-collecting laws apply only to the very small percentage of species that warrant such measures. An increasing number of other countries have imposed blanket bans on collecting, sometimes with the intention of preventing 'biopiracy', rather than in the interests of species-conservation. Even in the UK, there are many designated sites where blanket bans on collecting exist, but there is a general perception that individuals discreetly taking a few specimens of non-endangered species for personal study are unlikely to be prosecuted. There was therefore some consternation when a Czech coleopterist was fined and imprisoned for collecting beetles in a national park in India. A compatriot was also fined but released from custody. It remains to be seen whether the policies of countries outside the UK could be guided by InvLink's own guidelines on the appropriate use of legislation in invertebrate conservation.

The InvLink Code for Re-establishment reached its final stages for approval, having been re-drafted by AES representative David Lonsdale. The scope of the new draft was been widened to include novel introductions beyond the current geographic ranges of species. Such introductions might be needed in order to move species beyond man-made obstacles that could otherwise prevent them from colonising new regions in response to climate change. After the launch of the code, which is expected in 2010, it will be made available through the AES, together with a short version for ready reference.

The UK Biodiversity Action Plan remains a major topic at InvLink meetings. After the Priority Species Review, further discussion focused on the implementation of species-plans. This will involve Natural England and other national agencies, including those that run the Higher Level Scheme of Countryside Stewardship.

Displays, events and fieldwork

The AES displayed posters and other items related to conservation at various events organised by other societies, including a meeting on the theme of insect conservation in gardens, held jointly by the Royal Entomological Society (RES) and the Royal Horticultural Society at Wisley Gardens, in Surrey. There was an AES stand also at the RES annual meeting in Sheffield in July, at which ICN editor David Lonsdale was presented with the 2009 Marsh Award for Insect Conservation.

As reported elsewhere, the Society held a number of field and indoor events, which were intended to encourage young people to learn about insects in the wild and about the need to conserve their habitats. These events included a field trip to Bersted Brooks, near Bognor in West Sussex, where AES and Bug Club members provided some new invertebrate records. Recording was a key aim also at Osterley Park, Middlesex, now a regular venue, where members conducted a 'BioBlitz'. This involved a weekend survey of ancient grassland and woodland at Osterley Park. Members also began a study, initiated by Council member Jacqueline Ruffle, of the effects of grazing by Banded Galloway cattle at Headley Heath in Surrey.

Publications

The many articles in Invertebrate Conservation News covered topics as wide-ranging as the threats to corals in relation to 'climate engineering', plans for a third new nuclear power plant at Dungeness, south-east England, an alert about the Citrus longhorn beetle Anoplophora chinensis in the UK, the new guidelines on the feeding of invertebrates to captive bats, the principles for legal protection of invertebrate species by law, captive breeding of the Pearl mussel Margaratifera margaratifera in Wales, an endangered snail in Iowa, USA, Australian butterflies threatened by climate change and a possible new threat from the use of veterinary drugs based on avermectins.

David Lonsdale and Dafydd Lewis
13 April 2010

BUG CLUB: ANNUAL SUMMARY FOR THE YEAR 2009-10

Membership

Total membership of the Bug Club as reflected in the number of recipients of the Magazine at 31st December 2009 was 236.

Publications

The bimonthly 28 page Bug Club Magazine was produced in full colour this year for the first time, something which would not have been possible had the AES not been able to obtain additional funding, in this case from its partnership with the RES.

Events

The Bug Club was catered for or promoted, either solely or partially, by the AES at around 20 events, including at the RES York Insect Fair. The main AES events were held at the Cambridge University Department of Zoology (AES Members' Day, which included Bug Club speakers and exhibitors) and at various museums (National Museums Liverpool, Oxford University Museum, Horniman Museum, London) and there was a two-day BioBlitz at Osterley Park, Middlesex. The Bug Club Young Entomologists' Day at Oxford on February 20th 2010 was particularly successful and it is planned to repeat it in February 2011.

We also participated in meetings organised by our affiliates, the Quekett Microscopical Club and the Conchological Society. Further such events are planned during 2010, which marks the 75th anniversary of the AES, and regional events organized by RES Fellows are hoped for.

Development, Publicity & Affiliations

The Bug Club became governed by a partnership effective 1st January 2009 between the AES and the RES, and the former 'AES Bug Club' is now known simply as 'The Bug Club'.

Publicity materials including a Bug Club display banner, promotional leaflets and merchandise (Bug Club pencil, ruler, pencil case, naturalist's notebook) were produced.

Donations

The Bug Club was donated a Heath moth trap and a digital microscope during the year. A number of stick insects were donated to the Bug Club table at the AES Exhibition in October 2009 for the purpose of being given away to Bug Clubbers. Funding from charitable trusts applied for by the AES was used to run an entomology project at two scout groups.

Awards

The Gardiner Award [Best Bug Club Magazine article] was awarded as follows in 2009: Under 9 age group: First Prize Winner: Magnus McLeod (aged 4½). Highly Commended: Sophie Brown (aged 5). 9-13 age group: First Prize Winner: Rachel McLeod. Highly Commended: Matthew Sutton; Adila Stratford; Bethany Wildash.

The Ansorge Bequest [Best exhibit by younger members at the Kempton Exhibition] was awarded as follows in 2009: First Prize Winner was Theo Hamblyn, for his exhibit on phorid flies. This was a remarkable year and the judges had difficulty in choosing prize-winners among the very high standard of all exhibits. It was decided to award Highly Commended awards to the following: Isabella Baylis; Sam Baylis; Jody Holland; David May; Rachel McLeod; Daniel Osmond.

Other Activities

We ran two successful drawing competitions, one online and open to all and one for Bug Club members via the Bug Club Magazine. Six books were donated as prizes by Kingfisher Books (part of Pan Macmillan).

Governance

Michael Majerus, Chair of the Bug Club Committee, died in January at the age of 54 years. Dr Robin Wootton was elected to chair the Bug Club Committee at the annual meeting held on 17th November 2009at the RES headquarters in St Albans. Committee members Nov 2009 – Nov 2010 are Bill Blakemore, Lin Field, Archie Murchie (RES) and Dafydd Lewis, Peter May, and Kieren Pitts (AES).

Dafydd Lewis
28 February 2010

ANNUAL GENERAL MEETING - SATURDAY 18TH APRIL 2009

Minutes of the Annual General Meeting of the Amateur Entomologists' Society, held on Saturday 18th April 2009 at the Department of Zoology, University of Cambridge, commencing at 12:05 hrs.

Attendance: 43 members signed the AGM attendance register (additional members were present who did not sign in).

Members were welcomed by AES Acting President Dr David Lonsdale, who chaired the first part of the meeting before handing over to Dr Robin Wootton, following the election of the latter as President of the Society for the period 2009-2010.

A one minute silence was observed in memory of Michael Majerus, AES President 2005-2009, and other members deceased.

David thanked those who had organised the day, especially members of the Cambridge Genetics and Zoology departments whose contributions were very much appreciated, in particular Dr Remy Ware and Dr William Foster. The presence at the meeting of Brian Gardiner and Nick Holford, whose past contributions to the AES have been substantial, was also noted by the Chair.

1. Apologies for Absence

Apologies were received from Peter Hodge, John Howells, Wayne Jarvis, Peter May, Paul Sokoloff and Dr Phil Wilkins.

2. Minutes of the Previous Annual General Meeting

Copies of the minutes were circulated prior to the meeting and had also been made available to members via the AES website. It was proposed that the minutes be agreed to be correct.
Proposed Martin Hough; seconded Kieren Pitts; agreed nem con.

3. Matters Arising

There were none.

4. Hammond Award

This year's Hammond Award was made to David Keen for his article on dragonflies as well as in recognition of his other contributions to the Bulletin during the relevant period. David was unable to be present in person and the Award and Certificate will be sent to him by the Secretary after the AGM.

5. Cribb Award

It was announced that this award would not be presented this year.

6. Brian Gardiner Award

Those Gardiner Award winners present received their prizes, the remainder will be sent their certificates and cheques by the Secretary after the AGM. They were as follows. Age Category 9-13, Winners: Calum Lyle & Rachel McLeod. Age Category 9-13, Highly Commended: Samuel Baylis, Luke Andrews, Freya Carter, Harry Poore, Ella Wilkins, Bethany Wildash. Age Category Under 9, Winner: Magnus McLeod. Age Category Under 9, Highly Commended: Jodie Brown, Sophie Brown, Ben Newman, Ella Roy.

7. Reports of the Society

Report of Council: The Report of Council for the year ending 31st December 2008 was circulated prior to the meeting and had also been made available to members via the AES website. It was proposed that the report be accepted as an accurate account.
Proposed Martin Hough; seconded David Tatham; agreed nem con.

Report of the Treasurer: The Treasurer's Report for the year ending 31st December 2007 was circulated prior to the meeting and had also been made available to members via the AES website.
It was proposed that the report be accepted as an accurate account.
Proposed Martin Hough; seconded Kieren Pitts; agreed nem con.

Report of the Conservation Committee: The Conservation Committee Report for the year ending 31st December 2007 was circulated prior to the meeting and had also been made available to members via the AES website. (Formal acceptance of this report at the AGM is not required under the AES Constitution).

Report of the Youth Secretary: Bug Club matters were included in the Report of Council and therefore a separate report by the Youth Secretary was not considered necessary this year. (Formal acceptance of this report at the AGM is not required under the AES Constitution).

All the above reports will be published in the Bulletin during 2009.

8. Election of Council Members of the Society

(i) Election of President (2009-10)

It was proposed that Dr Robin Wootton be elected President of the Society. No other nominations had been received. *Proposed Nick Holford; seconded Martin Hough; agreed nem con.*

Following the election of the President the chairing of the meeting passed to him.

(ii) Election of Council Members 2009-12

Council Members standing down by rotation were Peter Hodge, John Howells, Wayne Jarvis, David Lonsdale, Kieren Pitts.

Those standing for election were Peter Hodge, John Howells, Wayne Jarvis, David Lonsdale, Kieren Pitts and David Tatham.

There were also 4 vacant positions for which no nominations were received prior to the meeting and none were offered from the floor.

It was proposed that as there was no contest for any of these positions that these people be elected *en bloc*.

Proposed Nick Holford; seconded David Humphries; agreed nem con.

9. Election of Officers of the Society 2009-10

The following council members were willing to stand for election into the indicated posts. Secretary – Dafydd Lewis; Treasurer – Peter May; Bulletin Editor – Phil Wilkins; Bulletin Co-Editor – Martin Hough; General Editor – Jacqueline Ruffle; Entomologist's Record Editor – Colin Plant; Exhibition Secretary – Wayne Jarvis; Advertising Secretary – Peter Hodge; Conservation Secretary – David Lonsdale; ICN Editor – David Lonsdale; InvLink Representative – [1]David Lonsdale; InvLink Representative – [2]Dafydd Lewis; Wants & Exchanges Editor – Peter May; Youth/Bug Club Secretary – Kieren Pitts; Bug Club Magazine Editors – Kieren Pitts and Dafydd Lewis.

It was proposed that as no positions were contested these people be elected *en bloc*.

Proposed David Humphries; seconded Kieren Pitts; agreed nem con.

10. Independent Examiner of Accounts 2008-9

It was proposed that John Flynn should continue as the Independent Examiner of Accounts.

Proposed Kieren Pitts; seconded Martin Hough; agreed nem con.

11. Any Other Business

No items had been received and none were raised from the floor.

There being no further items raised the meeting closed at 12:35 hrs.

AMATEUR ENTOMOLOGISTS' SOCIETY **INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 DECEMBER 2009**

	EXPENDITURE				INCOME		
GENERAL FUND							
2008		**2009**		**2008**		**2009**	
£				£			
	Journals				Membership Income		
20966	Journal printing	40540		20922	Subscriptions	34307	
				8308	Donations	16808	
6328	Journal Despatch	9891		89	Enrolment fees	0	
561	Wants & Exchange Lists	936		36	Wants & Exchange Lists	54	
27855		51367	51367	29355		51169	51169
	Membership Services				Other Income		
4277	Exhibitions	8734		404	Sale of Goods	899	
0	Stock Purchased	1126		39	Credit Card Fees	0	
1467	Decrease in value of Stock	0		920	Advertising Revenue	1875	
4464	Registrars Fees & Expenses	1014		10816	Exhibitions	11006	
10208		10874	10874	1050	Investment Income	139	
	Adminstration			0	Increase in value of stock	684	
52	Credit Card Fees	0		13229		14603	14603
2534	General Admin. Expenses	2700					
1101	Council Meetings/AGM	1806					
258	Insurance	312					
195	Conservation	148					
4140		4966	4966				
42203	Total Expenses		67207	42584			65772
381	Surplus Income to General Fund		0	0	Deficit to General Fund		1435
42584			67207	42584			67207
			=====				======

PUBLICATIONS TRADING ACCOUNT

2008		2009	2008		2009
886	Editorial & Misc Expenses	977	3645	Proceeds of Sale	6332
4911	Printing Publications	0	3188	Investment Income	404
0	Decrease in Stock Value	2551	3229	Increase in Value Of Stock	0
5797		3528	10062		6736
4265	Surplus to Publications Fund	3208	0	Deficit to Publications Fund	0
10062		6736	10062		6736

CROW & HAMMOND FUND

2008		2009	2008		2009
935	Awards	440	0	Investment Income	5471
425	Promotional Leaflets	670	0		5471
1360		1110			
6374	Investment deficit/surplus to fund	4361	7734	Deficit to Fund	0
7734		5471	7734		5471

DIRECTORY FOR ENTOMOLOGISTS PUBLICATION FUND

2008		2009	2008		2009
0	None	0	0	Advertising	0
0		0	14	Interest	2
			14		2
14	Surplus to Fund	2	0	Deficit to Fund	0
14		2	14		2

ANSORGE FUND

2008		2009	2008		2009
55	Investment deficit	111	0	Investment Income	0
150	Ansorge Award	180	0		0
205		291			
0	Surplus to fund	0	205	Deficit To Fund	291
205		291	205		291

OPAL FUNDING

0	Banners	149	0	Donations	2800
0		149	0		2800
0	Surplus to Fund	2651	0	Deficit to Fund	0
0		2800	0		2800

BALANCE SHEET AS AT 31 DECEMBER

2008		2009		2008		2009	
£		£		£	INVESTMENT VALUATION	£	
	GENERAL FUND				at 31st December		
1433	Balance at 1st Jan	1814		10791	Treasury Stock	10673	
381	Add Surplus income for year	-1435		24102	Barclays share account	23121	
1814	(-deficit) for year	379	379	59537	CAF Gold a/c	66909	
				13056	M&G Charifund	11456	
				13679	NSB Investment a/c	19735	
				13874	CAF Growth Fund	16993	
0	Opal Funding	2651		7699	Lazard Diversifield Fund	9258	
349	Directory Fund	351		142738		158145	158145
7856	Life Membership Fund	7856					
1395	Ansorge Award Fund	1104			CURRENT ASSETS:		
81982	Crow & Hammond Trust Fund	86343		1	Office Equipment	1	
88077	Publications Fund:	91285		4527	Stocks	5211	
179659		189590	189590	0	Debtors	0	
	Creditors:		189969	11632	Cash at Bank current a/c	7795	
8002	Advanced Subscriptions	9210		30577	Publications Stocks	28027	
0	Uncleared cheques	0		46737		41034	41034
8002		9210	9210				
189475			199179	189475			199179

Table 1. Diagnostic morphometrics of *Ponera testacea* worker specimens from Dungeness, East Kent, England and as cited in Csosz & Seifert (2003). CL = maximum median length of head capsule; CW = maximum cephalic width in full-face view; CS = cephalic size (mean of CL and CW); PH = height of petiole node; PL= length of petiole node. All dimensions in µm. Number of asterisks is proportional to discriminatory value of parameter (max. 3).

Specimen number/ source	**Morphometrics**							
	CL	**CW**	**CL/CW****	**CS*****	**PH**	**PL**	**PH/PL**	**CS × (PH/PL)*****
Dungeness 01: (2007)	645	489	1.319	567	208	227	0.916	519
Dungeness 02: (2008)	637	480	1.327	559	209	200	1.045	584
Dungeness 03: (2008)	669	524	1.277	597	221	236	0.936	558
P. testacea (Csosz & Seifert, 2003)	-	-	-	-	-	-	-	546±27 [477-598]
P. coarctata (Csosz & Seifert, 2003)	-	-	-	-	-	-	-	680±33 [618-776]

from the clustered green squares of European *coarctata*. Dr Seifert comments that the agreement of these two statistical approaches, the one explorative (PCA), the other hypothesis-driven (DA), is a very convincing result in showing separation of the two species. Figure 3 (from Csosz & Seifert 2003) shows the distribution of values for the index CS × (PH/PL) for the two species. The lack of overlap confirms its use as a relatively easy and reliable means to distinguish the species.

Discussion

The workers of *P. testacea* were found in pitfall traps set in areas of Denge Beach within the RSPB reserve (50.9183N: 0.9600E: specimen 01), along the eastern border of Denge Beach (50.9238N: 0.9625E: specimen 02), and from the Ness foreshore, near a container yard, halfway between The Pilot Inn and the Ness headland (50.9198N: 09779E: specimen 03). Following confirmation of the determinations, one of the authors (PJA) has made several visits to these and other areas across the Dungeness habitat, during the summer of 2009, to look for specimens *in situ* at nesting sites, so far unsuccessfully. However, Andrew Jarman has since determined *testacea* workers among *Ponera* specimens taken by him in 2008 near the RSPB centre at Dungeness (A. P Jarman, 2009, pers. comm.), around 2 km northwest of the location for specimen 01 of this paper. The species can therefore be considered as established over a relatively wide area of the habitat at Dungeness.

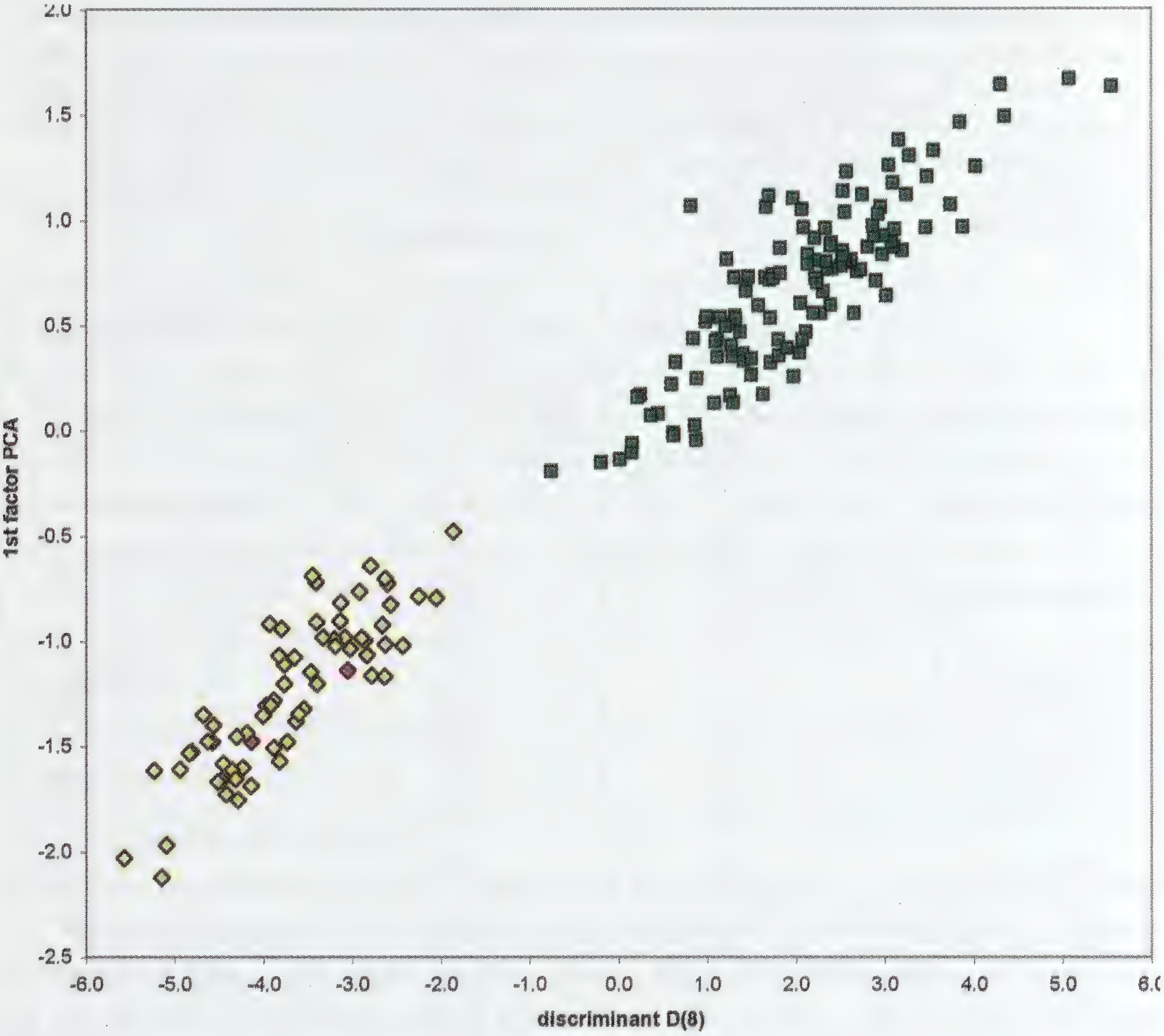


Figure 2. European *Ponera* species – principal component vs descriminant analyses for 8 character measurements (reproduced by permission of B. Seifert). Key: Rhombs - *P. testacea* (Dungeness specimens 01, 02 in red; other European samples in yellow). Green squares - *P. coarctata.*

For age and size, Dungeness is probably unique in Europe as a vegetated shingle spit, and the occurrence of *P. testacea* is further evidence of its importance as a specialised habitat, especially one positioned so close to the European mainland. Any extant earlier specimens of *Ponera* taken at Dungeness should be checked to see if they are *testacea. Ponera* specimens taken at other similar xerothermic sites, especially (but not only) along the south coast, should also be checked, and any such sites visited, with a view to discovering possible new British localities for the species. Most old records for *P. coarctata* from obviously non-xerothermic sites are probably safely assumed as that species, whether specimens are re-examined or not, but others may be worthy of investigation. H.G. Jeffery (1931), for example, describes *P. coarctata* from the Isle of Wight as 'a small retiring yellow ant', citing several localities, among them a find attributed to Jeffery himself (and upon which his description is therefore likely based) from 'Arreton Down, twice under pieces of chalk'. The colour description is more applicable to *testacea* than *coarctata*, and the habitat reminiscent of the Belgian *testacea* site mentioned above.

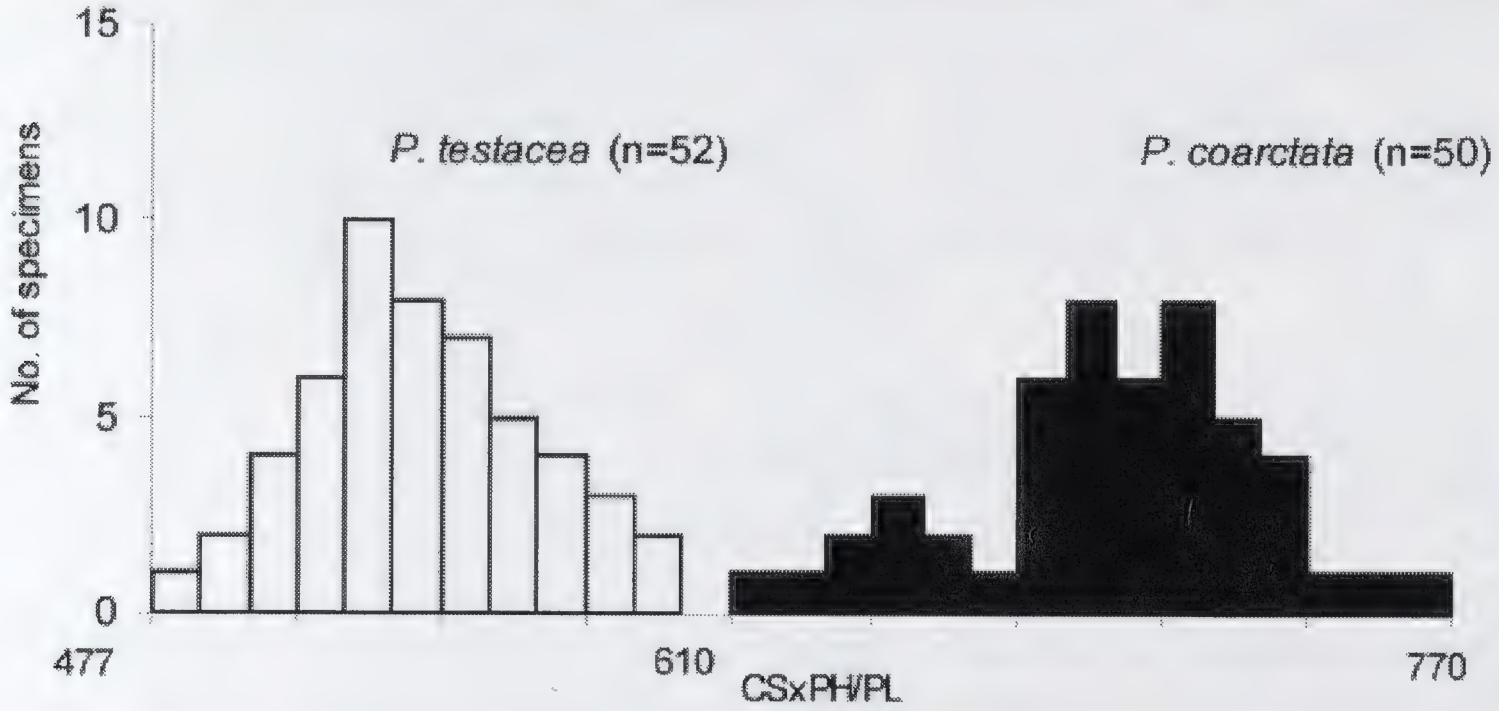


Figure 3. Values for the index CS × (PH/PL) for *P. testacea* and *coarctata*, showing no overlap between the species. Reproduced from Csosz and Seifert (2003).

Acknowledgements

The RSPB is thanked for providing permission to collect on their reserve. We wish to thank Dr Bernhard Seifert (Görlitz) for confirming the determinations of, and further characterising, specimens 01 and 02, and for very kindly permitting publication of the statistical analysis shown in Figure 2, and Dr Sandor Csosz (Budapest) for supplying a version of figure 3 from their joint paper, and permitting its publication in this one. François Vankerkhoven (Diest, Belgium) is thanked for kindly supplying details of the Belgian records and for helpful information on the recorded European distribution of *Ponera testacea*. The authors are also grateful to Andrew Jarman (Edinburgh) for sharing details of his own captures at Dungeness.

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OBSERVATIONS ON THE USE OF WING-MARKINGS AND GENITALIA TO DISTINGUISH DARK-BARRED TWIN-SPOT CARPET *XANTHORHOE FERRUGATA* (CL.) AND RED TWIN-SPOT CARPET *X. SPADICEARIA* ([D. & S.]). (LEP.: GEOMETRIDAE) AND ON THE IMPLICATIONS FOR RECORDING THESE SPECIES

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Abstract

Differences in wing markings between *Xanthorhoe ferrugata* (Cl.) and *X. spadicearia* [(D. & S.)] (Geometridae) are discussed. Examination of a long series of male genitalia confirm that presence of a notch in the inner edge of the central forewing fascia near the costa, is an unreliable determining feature. Approximately one third of *X. spadicearia* and two-thirds of *X. ferrugata* are notched. The degree of contrast between the pale post-median fascia and the terminal and sub-terminal areas, and other features of banding are useful indicators, and can in combination be used to safely identify many specimens. The red-banded and dark-banded forms in *spadicearia* form a continuum and are not clearly distinct as in the black-banded and red-banded forms of *ferrugata*. Examples with bold underside markings are likely to be *spadicearia*. Recording bias created by use of the notch is likely to favour *ferrugata* and would therefore have partly masked any decline in *ferrugata*. The 92% decline in *ferrugata*, as recorded in long term light trap data, is unlikely to have been affected by any bias. The apparent scarcity of the typical form of *ferrugata* (with red median forewing fascia) would appear to be genuine.

Keywords: *Xanthorhoe ferrugata, Xanthorhoe spadicearia,* Geometridae, morphology.

Introduction

Plant (2005) investigated the use of a notch in the inner edge of the median fascia of the forewing near the costa to separate these two species. He demonstrates that the assertion in Skinner (1984, 1998) and Waring, Townsend and Lewington (2003) that only *ferrugata* possesses this notch is incorrect and describes and illustrates the differences in the genitalia. Having long-held doubts as to the validity of this character, I was prompted to examine the genitalia of material in the Hope Collection, Oxford University Museum of Natural History, as part of ongoing curatorial work on the British macros. The purpose of this paper is to present and interpret data confirming the result of Plant (2005) from a larger sample, including specimens of the uncommon (typical) form of *ferrugata* with reddish median fascia, as well as f. *unidentaria* Haworth, which has the median fascia blackish. *X. spadicearia* has a reddish or dark purplish-brown central fascia. From this, suggestions are made with regard to suitable methods for identification, and the implications of past use of the notch in terms of trends in abundance are discussed.

Methods

In order to obtain a large sample in the shortest possible time only males were examined, since this can be achieved rapidly (Plant, 2005) and there is no

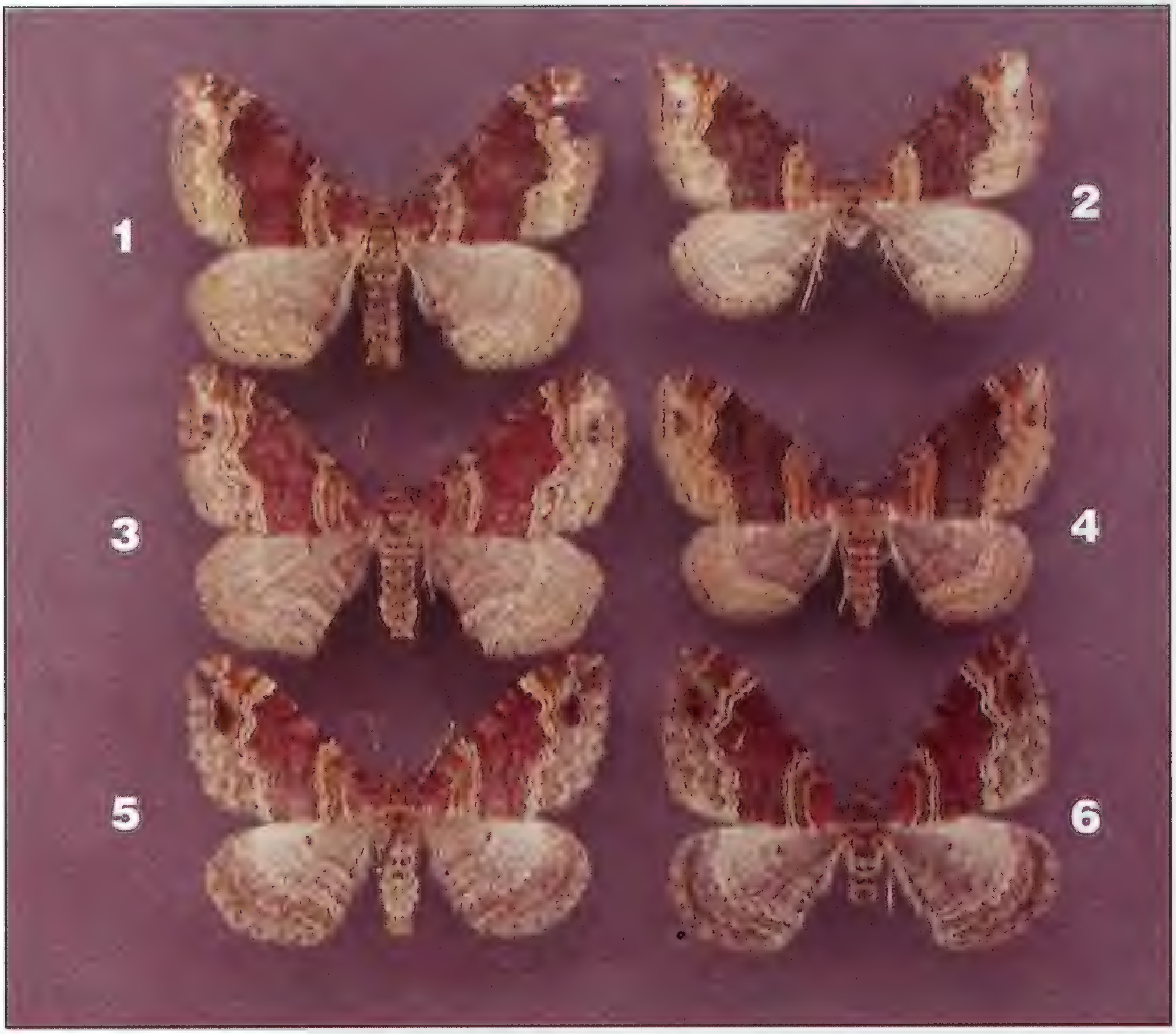

Plate 13. *Xanthorhoe* species. Figs 1 & 3: *X. ferrugata,* typical form; 2 & 4: *X. ferrugata* forma *unidentaria*; 5 & 6: *X. spadicearia.*

indication of sexual dimorphism in either species. Males standing under *X. ferrugata* and *X. spadicearia* were first scored for forewing characters, and then determined by examination of their genitalia. With a little practice, this can be done by brushing off scales without detaching the abdomen from the specimen. Upperside forewing characters were scored in several ways. Whether or not each specimen was standing under the correct species was also recorded. A small number of aberrant, very worn or fragile specimens were excluded. Material sampled had been collected over a wide geographical area of Britain. The vast majority were wild-caught (long series of sibling bred specimens could bias the results). Close examination under a binocular microscope revealed that most had at least a very slight notch where the line meets the first radial vein, but often this was only visible under magnification. Twenty-five randomly selected specimens of each species were also examined, after genitalic determination, for consistent differences on the underside. Upperside characters were scored as follows:

'Notch absent' – notch absent to the naked eye

'Notch strong' – notch clearly evident to the naked eye.

'Median fascia red/purple' – If very dark at least tinged red or purple.

'Median fascia black' – median fascia sooty black or grey-black, with no trace of red or purple.

The forewing of both species has a fine white or whitish line on the outer edge of the broad dark median fascia. Outside this is a fine dark line, outside of which is a narrow post-median fascia, whitish or buff in colour. The sub-terminal and terminal areas are either similar in colour to the pale post-median fascia or darker, resulting in varying degrees of contrast. Where the contrast is high, a pale, wavy sub-terminal line is evident, and where it is low this is sometimes faint or obscure (personal observations). This character was scored as follows:

'Contrast high' – contrast between pale post-median fascia and darker sub-terminal and terminal areas clear.

'Contrast moderate' – contrast between pale post-median fascia and sub-terminal and terminal areas less clear, the latter sometimes blotchy.

'Contrast low' – sub-terminal and terminal areas pale, contrast with pale post-median fascia slight.

Results

A total of 114 specimens was examined (Table 1). No *spadicearia* were found standing under *ferrugata* (although one female was suspected to be *spadicearia*). Of the ten *ferrugata* standing under *spadicearia*, nine were notched, and nine scored low on contrast. eight were f. *unidentaria*, all notched and with low contrast, the two typical form specimens both being notched with low contrast.

Table 1. Summary of male *X. spadicearia* and *X. ferrugata* forewing characters on Hope Collection material (confirmed by genitalic determination).

Taxon	**Notch absent**	**Notch present**	**Median fascia red/ pruple**	**Median fascia black**	**Contrast* high**	**Contrast moderate**	**Contrast* low**	**Total**
X. spadicearia	27	30	57	–	53	4	0	57
X. ferrugata (typical form)	2	13	15	–	1	5	9	15
X. ferrugata f. *unidentaria*	9	33	–	42	0	18	24	42
All *X. ferrugata*	11	46	15	42	1	23	33	57

Other trends were noticed, but were too slight and comparative to be scored, linked to the degree of contrast in the forewing pattern. The white line edging the outside of the dark median fascia tended to be brighter, slightly thicker and more clearly chalky-white in *spadicearia*; narrower, usually off-white or buff and often inconspicuous in *ferrugata*. This trend was also noted by Waring *et al* (2003 and 2009 2nd edition) and alluded to by Skinner (1984 and subsequent editions). Also, in *spadicearia*, the dark line outside the white edging tended to be stronger, and the pale post-median fascia beyond it tended to be broader and more whitish. The latter contributes to there being a lower degree of contrast between the pale post-median fasciae and the outer area in *ferrugata*. Consequently the moth tends to be plainer-looking and the markings more understated, and *spadicearia* appears generally more brightly marked and strongly banded, although in some only the costal half of the area beyond the post-median fascia is significantly darker. This finding was summarised in Waring *et al* (2009). In *spadicearia* the red central fascia tends to be mottled, whereas in the typical form of *ferrugata* it is usually more uniform. In northern Scotland, examples of *spadicearia* occur with the central fascia paler, sometimes reddish-brown, and/or broken. These variations do not appear to occur in *ferrugata*.

Trends were also found on the underside. *Spadicearia* were generally paler and more boldly-marked, with the narrow pale post-median fascia more distinct than in *ferrugata*, especially on the forewing. In *spadicearia* the sub-terminal area of the forewing was often orange-brown, especially toward the apex, whereas in *ferrugata* this area may be darker but not often orange-brown. *Ferrugata* were darker and more uniform in colour, with weaker markings. Some *spadicearia* were more weakly marked and therefore resembled *ferrugata*, but no *ferrugata* were found that were as pale and brightly marked as the majority of *spadicearia*. Examination of undersides was originally prompted by a comment from Jon Baker that they showed useful characters, and they are illustrated by Baker (2007) and in Waring *et al* (2009).

Discussion

The results for the notch character are summarised in Table 2, and compared and combined with those of Plant (2005) and Dickerson (2008). The percentages from the three studies vary considerably, which may in part be due to slightly different interpretations by the three observers. However, significant proportions of all the samples are contrary to the notch theory, and overall very roughly two-thirds of *ferrugata* were notched and only one third notched in *spadicearia*. Therefore, although the notch appears to be more frequent in *ferrugata*, the character is clearly not reliable for separating the two species. It is also somewhat open to interpretation and some examples appear asymmetrical in this respect, in some cases due to wear.

The other differences in forewing markings found here agree with those stated in Waring *et al* (2003) to be 'reasonably consistent'. Plant (2005) agrees that these 'seem to work satisfactorily'. 93% of *spadicearia* scored high contrast, with 7% moderate. In the *ferrugata* sample, only one moth scored high on contrast, but

Table 2. Summary of the findings of three authors recording the notch character in *X. spadicearia* and *X. ferrugata*, including percentages and sample size.

Author	***X. spadicearia* notched**	***X. spadicearia* no notch**	***X. ferrugata* notched**	***X. ferrugata* no notch**
Plant (2005)	10 (43%, n = 23)	13 (57%, n = 23)	19 (68%, n = 28)	9 (32%, n = 28)
Dickerson (2008)	29 (26%, n = 111)	82 (74%, n = 111)	30 (55%, n = 55)	25 (45%, n = 55)
Townsend	30 (53%, n = 57)	27 (47%, n = 57)	46 (81%, n = 57)	11 (19%, n = 57)
Overall	69 (**36%**, n = 191)	122 (**64 %**, n = 191)	95 (**68 %**, n = 140)	45 (**32%**, n = 140)

there was more variability in this respect, with 58 % scoring low contrast and 40% moderate. This is a comparative feature and scoring may be slightly subjective, and the note of caution on variability in Waring *et al* (2003) (intended to include the notch) is clearly justified. As with all difficult species pairs, occasional examples will confound the rules. However, with practice and the benefit of confirmation by genitalic examination the differences in this case are not difficult to see, with only a minority of specimens (in good condition) showing intermediate or contradictory characters.

Both Plant (2005) and Dickerson (2008) mention a dark form of *spadicearia*. Certainly there is considerable variation in the colour of the median band, but examination of extensive pinned material suggests that this represents a continuum, rather than indicating two well-demarcated forms as is the case in *ferrugata*. It also appears to be the case that worn specimens of *spadicearia* are often duller and as a result probably more likely to be mistaken for black-banded *ferrugata*.

Plant (2005) mentions that more research is needed to help identification in the field, and that examination of genitalia is likely to be necessary. One problem is that both species, like many geometrid moths, rest with the wings closed up when in the moth trap or box, especially at night. In the author's experience (and in that of others) *spadicearia* is usually far more numerous at light. The pale banding and tawny apical area on the underside of well-marked *spadicearia* make them relatively easy to spot (Jon Baker, pers. comm. and pers. obs.) Therefore, moths with plain-looking undersides, and lacking or with less conspicuous tawny colouring near the apex of the forewing may be selected as candidate *ferrugata* (of either form). These will eventually put their wings down if placed in a pot under the MV light and are more inclined to do so in daylight.

On the upperside, the vast majority of moths with blackish central fascia lacking any trace of red or purple (Plate 13, Figs 2 & 4) can be safely assigned to *ferrugata* f. *unidentaria*, since on *spadicearia* it is always reddish or purple tinged, provided they are in good condition. However, they should be examined very carefully, preferably in daylight, especially those that are borderline cases in respect of the other characters listed above. If doubt remains, the genitalia should be checked. Similarly, the majority of brightly-marked moths having red or purple central fascia with strong chalky-white post-median outer edging and thicker pale post-median fascia contrasting strongly with outer area (Plate 13, Figs 5 & 6), along with underside markings as described above, can be safely assigned to *spadicearia*. Duller, plainer red-banded moths with moderate contrast, weaker edging, narrower post-median fascia and plain undersides should have their genitalia checked in case of *ferrugata*, especially the typical form (Plate 13, Figs 1 & 3) which is likely to cause the most problems. Worn specimens with unclear markings should always be checked.

A small sample of experienced lepidopterists consulted on the notch character by the author were divided on it's usefulness with only some relying on it in the past. Others, including the author had ignored it, having seen many brightly-marked examples with reddish, notched median fascia (otherwise indistinguishable from un-notched examples) and simply assumed that typical *ferrugata* was excessively rare. The reasoning being that if these were all in fact *ferrugata*, then it's reddish typical form would be far commoner than the books suggested, and since I was hardly ever seeing f. *unidentaria*, this didn't make sense. I had also seen un-notched f. *unidentaria*. However, the apparent scarcity of typical *ferrugata* would seem to be genuine. Roughly 15% of specimens in the Hope collections are of this form, and since most collectors preferentially select the uncommon or different, the real figure is undoubtedly lower.

The notch is not mentioned in early works such as Newman (1884), Meyrick (1895), Barrett (1902), Tutt (1907-8) or South (1908), who gives no methods to distinguish the two species. Tutt gives other characters which broadly agree with those found here. In the Hope material examined, there were very few misidentifications which could be due to application of the notch method. Therefore, the collectors evidently either ignored it or were unaware of it, so perhaps it's usage may not have been as extensive as Colin Plant suggests, historically at least. The evidence suggests that early collectors were generally accurate in their identification of this pair, but may have tended to overlook a small number of typical *ferrugata* as *spadicearia*. Figure 9 on plate 72 in South (1908), labelled as *spadicearia*, bears a striking resemblance to some of the *ferrugata* f. *unidentaria* in the Hope standing under *spadicearia* (although admittedly the reproduction is poor).

It is relevant to consider the likely effect of reliance on the notch rule on distribution and abundance data. Clearly, by using it many notched *spadicearia* will be incorrectly recorded as *ferrugata*, resulting in over-recording of *ferrugata* (and in particular the red-banded form). Conversely, the incorrect recording of un-notched black-banded *ferrugata* f. *unidentaria* as dark *spadicearia* is inevitable if the rule is applied rigidly, but is perhaps less likely if, as seems likely, most recorders have also considered the colour of the band, and also the strength of the white outer edging since this is also mentioned in Skinner (1984). *Spadicearia* dark enough to be confused with black-banded *ferrugata* are relatively uncommon, for example Plant (2005) estimates that dark forms constitute 5% of the population in Hertfordshire. It is also likely that some un-notched red-banded *ferrugata* have been recorded as *spadicearia*, but given its scarcity these would be far fewer in number. Overall then, the bias is likely to be in favour of *ferrugata*.

Certainly, discovery that the notch method is unreliable has prompted lepidopterists and recording schemes to re-examine their specimens and records. Plant (2005) suggests that many individuals may not be identifiable without dissection, and quashes his own red-banded *ferrugata* records from Hertfordshire, the only ones for that county. However, the observations made in the current paper suggest that rejection of all records of both species and insistence on inspection of genitalia for acceptance of records would be an over-reaction. Those most likely to be erroneous are where *ferrugata* has been recorded in numbers, especially if many were said to be of the red-banded form (although this may not always be noted). Most site records are probably correct, but the new information introduces an element of doubt where numbers were recorded, since some individuals are likely to have been in worn condition and/or atypical.

The long-term Rothamsted light trap data series suggests that *ferrugata* is in steep decline, with a recorded fall in numbers of 92% over 35 years since 1968 (Fox *et al* 2006). It would appear unlikely that the Rothamsted data has been affected by misidentification. Since *spadicearia* is more abundant than *ferrugata*, and for the reasons given above, a decline in the latter would probably have been masked by any confusion in identifying the two species, unless the decline is even more serious than suggested by the Rothamsted data.

In a recent review (Maddock, 2007), *ferrugata* was found to meet criteria for inclusion in the list of UK Biodiversity Action Plan Priority Species, based on the Rothamsted data. This has since been accepted, the criteria for inclusion being 'marked decline in the UK'. The recorded decline tallies with the author's own observations (and those of others). As a teenager collecting in Lincolnshire in the 1970s I saw only *ferrugata* f. *unidentaria* and (oddly) no *spadicearia*. Yet since then, I have seen only a handful of *ferrugata* (all f. *unidentaria*), despite travelling widely in the UK, but have seen *spadicearia* abundantly in Hertfordshire, Buckinghamshire, Oxfordshire and elsewhere. In an extensive survey in Milton Keynes in 1999 (Townsend, 2000), I recorded 277 *spadicearia* at MV light and only one *ferrugata* (f. *unidentaria*), netted after dark away from the light traps. It is possible that others were overlooked, but they would certainly have been few in number. It is interesting that two such closely related species with apparently similar biology have had such contrasting fortunes. It is hoped that this paper will help clarify the situation and thereby help ensure their accurate recording, thereby helping us gain a better picture of their status and the relative frequencies of their various forms.

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AN EXAMINATION OF THE STATUS OF *DIACHRYSIA STENOCHRYSIS* (WARREN, 1913) AND ITS POSSIBLE OCCURRENCE IN BRITAIN AS A SIBLING OF *D. CHRYSITIS* (L.) (LEP.: NOCTUIDAE)

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Abstract

The status of the taxon *Diachrysia stenochrysis* (Warren, 1913) is discussed. British examples of the forma *juncta* Tutt, 1892 (= *Diachrysia tutti* Kostrowicki, 1961) of the Burnished Brass moth *Diachrysia chrysitis* (L., 1758) are, according to European authors, referable to this taxon. This paper reviews the evidence for whether the two should be regarded as full species or as subspecies and calls for research into distribution, phenology and ecology of British populations to complement that already undertaken elsewhere, as well as specific DNA studies to determine the true status of this taxon.

Keywords: Distribution, Britain, *Diachrysia*, *chrysitis*, *stenochrysis*.

A summary of research on *tutti*

The species that British lepidopterists refer to as the Burnished Brass moth *Diachrysia chrysitis* (L.) has long been known to be present in two distinct 'forms' with typical specimens having two, completely separated vertical bands of brassy-green colour on each forewing and others, referred to as f. *juncta* Tutt, 1892 having these two bands joined by a third, horizontal band of brassy-green. However, the status of this latter form has been to subject of debate for many years. Kostrowicki (1961) elevated it to full species status, calling it *Plusia tutti* and since then many workers have attempted to address this issue from various scientific directions. In chronological order, the more important of these are as follows:

Lempke (1965) studied the genitalia of both taxa and decided that whilst he could find insufficient differences in the shape of the male valvae he could observe variations in the shape of the ostium bursae of the female; on this basis he concluded that the two were indeed separate species. This was disputed by Urbahn (1966), who demonstrated that the differences in female genital structure were artefacts resulting from slide preparation and concluded that there was, therefore, insufficient genitalia-based evidence to support '*tutti*' as a separate species. Independently, Lempke also realized his error and corrected this in a subsequent publication (Lempke, 1966).

Urbahn (1967) reared adults from wild caught females noting, quite properly, that the male parent was, therefore, unknown. He observed similar variation in genital structure to that which he had already noted in wild caught individuals and concluded that there was insufficient evidence to regard '*chrysitis*' and '*tutti*' as separate species.

Rézbányai-Reser (1985) found distinct phenological and ecological differences between the two taxa in Switzerland, by attracting adult males to compounds containing the two presumed pheromone components (Z)-5-decenyl acetate and (Z)-7-decenyl acetate. *D. tutti* was shown to be confined to humid, warm habitat types between 200 and 500 metres altitude and was never found above 1000 metres nor in xerothermic habitats. On the other hand, *D. chrysitis* was found in all habitats below 2050 metres. In areas of sympatric occurrence (i.e., where both species are found) both taxa are bivoltine, but *tutti* consistently started to fly a few days before chrysitis. He concluded that *D. chrysitis* and *D. tutti* are, beyond doubt, distinct taxa, though probably not full species. More likely, he concluded, they are subspecies that were at one time geographically isolated. East Asiatic *D. tutti* probably met European or Siberian *D. chrysitis* in central Europe in the post-glacial period forming mixed populations, but due to their differing pheromones the merging of the two taxa has advanced but little since then.

Priesner (1985) used electro-physiological and field trapping techniques to demonstrate that morphologically separate populations were attracted by chemical variation of the pheromone attractant. These two populations corresponded broadly to *D. chrysitis* s. str. and *D. tutti* as defined by Kostrowicki, although there was some degree overlap in both wing morphology and genital armature. He discovered, independently of the work by Rézbányai-Reser (*op. cit.*), that *D. tutti* starts to fly and exhibits a peak flight period earlier than does *chrysitis* in areas of sympatric occurrence. No opinion was passed on taxonomic status, and further studies were called for to determine if there are two separate full species or whether they represent a stage of, as yet incomplete, speciation.

Bruun (1987) used the same pheromones in Finland as did Priesner (*op. cit.*) in Switzerland and again was easily able to define two groups of moths. These he examined in terms of longitudinal ridge density of the lamellar hind wing scales, as well as the distance between the two parts of the forewing median fascia. The ridge density varied significantly between the two taxa. Males of *D. chrysitis* had an average of 628 ridges per mm (plus or minus 34) whilst *D. tutti* averaged 532 (plus or minus 37). It will be seen that even taking into account the standard deviation values there is no overlap in range. This clearly supports the earlier electrophoretic studies of Priesner (*op. cit.*) and shows that ridge density can be used to separate males. In the case of moths with a split median fascia he measured the minimum distance between the borders of non-metallic scales in the fascia, but examination of the scatter-diagram in his paper shows a very clear overlap between the two taxa suggesting that this difference is unlikely to be statistically significant.

Next, Svensson, Douwes, & Stille (1989) used allozyme electrophoresis and wing pattern analysis in combination and reached a conclusion that suggests clearly that *D. tutti* is a separate species occurring sympatrically with *D. chrysitis* in the study area.

Löfstedt (1994) investigated female pheromone production in strains of *Diachrysia* raised in the laboratory from field-collected gravid females. Essentially, males trapped with *tutti* pheromone almost exclusively had a clearly broken wing marking whilst the *D. chrysitis* pheromone gave more mixed catches, but with a prevalence of males with an unbroken (or almost unbroken) wing marking. This provides evidence that the two are probably separate species. The fact that some males with typical *tutti* responses were attracted in the field to the *D. chrysitis* pheromone whilst in a flight tunnel some *D. chrysitis* males were attracted also to the *D. tutti* pheromone does not contradict this conclusion; instead, it indicates that cross-attraction may take place between the two taxa under natural conditions.

Finally, in this short review of relevant research, Hille, Miller & Erlacher (2005) examined mitochondrial DNA sequence variation in the two pheromotypes. The results of this latest work clearly support the existence of separate genetic lineages for each taxon and firmly support the conclusions of Rézbányai-Reser (*op. cit.*) that *chrysitis* and *tutti* are, beyond doubt, distinct taxa.

The position of *stenochrysis* in Britain

Diachrysia stenochrysis was described as a new species by Warren (1913) and affects the Eastern Palaearctic Region. Its validity as a separate species in not currently disputed, though it appears inseparable from the Western palaearctic *tutti* in external morphology – a phenomenon that is by no means rare within the Plusiinae. It is supposed to have extended its geographical range westwards whilst at the same time *chrysitis* may have spread eastwards and it is a belief held by several authors that the two species have now overlapped.

Consequently, there are two quite separate issues to address – first whether *tutti* is a form of *chrysitis* or a full species in its own right and second whether *stenochrysis* is the same as *tutti* and thus present in the British Isles. If the latter proves to be the case, then clearly the name *stenochrysis* takes precedence over the name *tutti*. For this to be the case however, there ought to be no records of *tutti* that predate the westwards range expansion of *stenochrsis*; if such records do exist then there is the possibility that there may even be three distinct species in Britain – *chrysitis* (L.), *tutti* Kostrowicki and *stenochrysis* (Warren). Ronkay, in Goater, Ronkay & Fibiger (2003) reviewed the genus *Diachrysia* at the wider European level and more recently Ronkay, Ronkay & Behounek (2008) did so for the entire of the Palaearctic Region; in doing so these authors have concluded that *D. tutti* is taxonomically the same as the Eastern Palaearctic species *Diachrysia stenochrysis*. However, the evidentiary details of their research are not presented – nor are references to relevant publications cited. This situation clearly requires further investigation.

A short review of British material

On the basis of external morphological characters alone, I arranged the 68 specimens in my own collection into three groups – *chrysitis* (20 specimens), *stenochrysis* (22 specimens) and indeterminate (26 specimens). These I exhibited at the 2009 Annual Exhibition of the British Entomological and Natural History Society in London. My reasons for doing this included the fact that Hungarian noctuid specialist Balázs Benedek, who until recently worked on Noctuidae at the Hungarian Natural History Museum in Budapest, was scheduled to stay with me in late December 2009. Balázs has considerable experience of the *stenochrysis* problem. Upon examination of my arrangement he re-positioned just four 'borderline' specimens between the *stenochrysis* and indeterminate groupings – suggesting that my interpretation of the situation was more or less adequate. It thus seems that British Burnished Brass moths can be divided into three categories with relative ease.

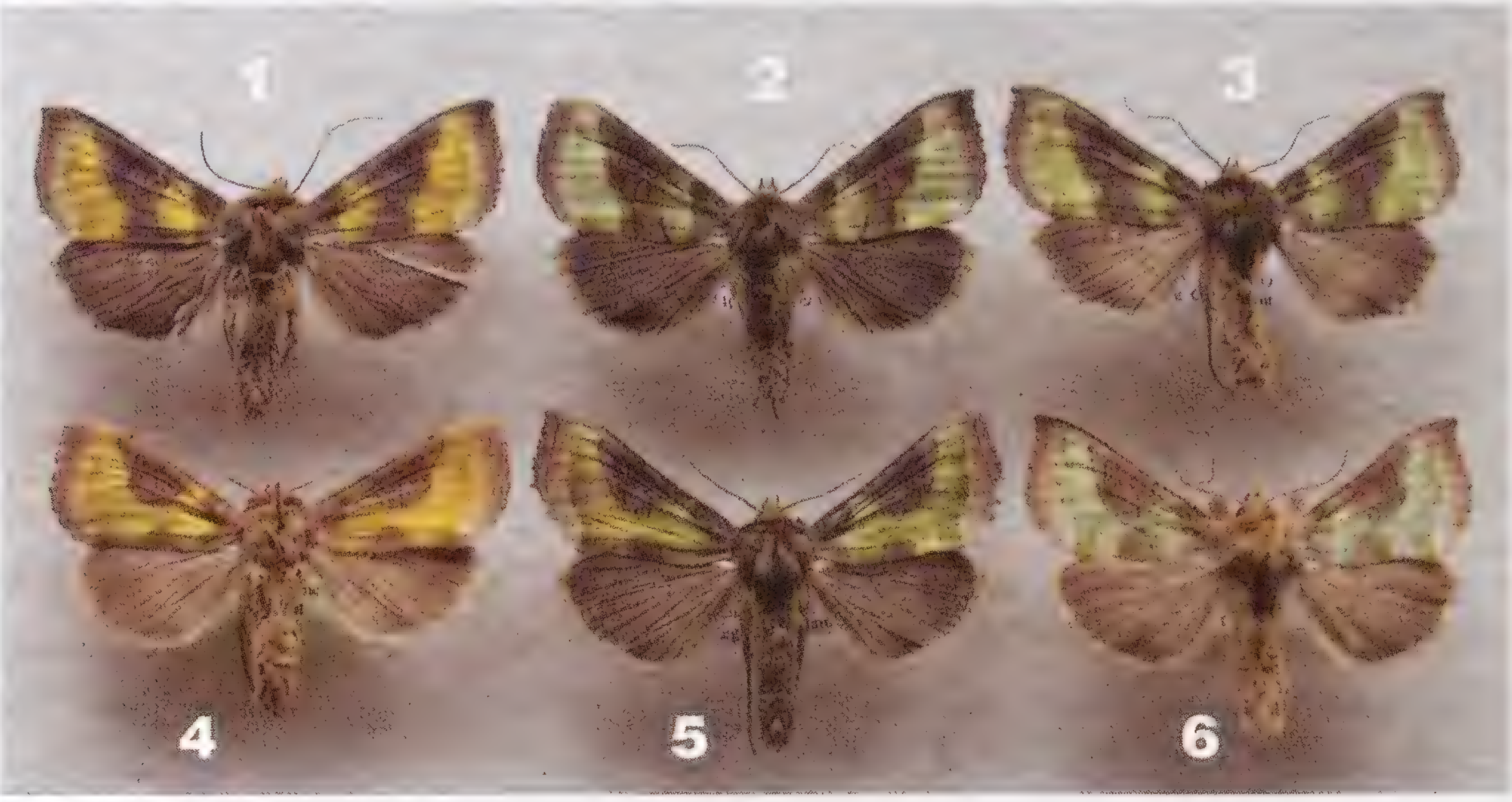

Plate 14. Comparison of *Diachrysia chrysitits* (L.) with *D. stenochrysis* (Warren). 1 – 3: *D. chrysitis* (1: Tennyson Down, Isle of Wight, 5.vi.2007, leg. C. W. Plant; 2: Tyldesley (Greater Manchester), South Lancashire, 26.vi.2009, leg. C. W. Plant; 3: Norwich, East Norfolk, 20.vi.2009, leg. C. W. Plant). 4 – 6: *D. stenochrysis* (4: Hungary – Sar Hegy, 30.v.2005, leg. C. W. Plant; 5: Tyldesley (Greater Manchester), South Lancashire, 26.vi.2009, leg. C. W. Plant; 6: Bishops Stortford, Hertfordshire, 30.vi.1989, leg. C. W. Plant. All specimens in the author's collection.

Upperside characters

***Diachrysia chrysitis* (Linnaeus, 1758)** Plate 14, Figs 1-3

Forewings each with two vertical bands of brassy-green colour that are *clearly separated* by the brown, non-metallic median fascia (that these are true *chrysitis* is not, and never has been, in dispute).

***Diachrysia stenochrysis* (Warren, 1913) = *tutti* Kostrowicki, 1961**

Plate 14, Figs 4-6

Forewings each with the two vertical brassy-green colour bars clearly and obviously joined by a solid, clearly defined, horizontal band of brassy-green colour that is at least 3 millimetres in width.

Intermediate specimens

Forewings each with the two vertical brassy-green colour bars joined only by a very thin horizontal band of brassy-green colour or by just a few scales. These might be forms of either 'species' or may represent hybrid examples?

Underside characters

I have been unable to discern any differences in external morphological characters affecting the underside of the adult moths.

Breeding/hybridization experiments

Whilst two different species may be physically able to mate and even produce offspring, those offspring should be infertile if the parents belong to different species (obvious examples being Mules and Hinneys resulting from crosses between Horse and Donkey). There seems little point, however, in undertaking such experiments with *Diachrysia* species unless it is known with certainty that the two parents are of different species. This would, of necessity, involve pairing valid *chrysitis* from Britain with valid *stenochrysis* from the far eastern shores of the Palaearctic Region. The present author would be interested in such collaboration if any reader in the far east is sufficiently interested.

Genitalia differences

Males. The findings of Lempke (1965; 1966) and Urbahn (1966; 1967) have already been discussed above. Their discussions were based on the valvae of males and I concur with their view that these differences variable and are thus inadequate for separation. However, according to Goater, Ronkay & Fibiger (*op.cit.*), on the everted vesica of the male aedeagus *viewed from the right* the larger of the two dorsal-basal diverticula is large and rounded in *chrysitis* whilst in *stenochrysis* it is smaller and ovoid. On the everted vesica of the male aedeagus *viewed from the left* the ventral and the lateral of the three visible sub-basal diverticula are of equal size in *chrysitis* whilst in *stenochrysis* the ventral is larger than the lateral. Note that the everted aedeagus *must* be viewed in three-dimensions, floating in fluid, for these differences to be apparent, since cover-slips placed over the aedeagus during slide mounting distort the shapes and result in not all the necessary characters remaining visible in one view. It is useful to examine comparative material first in order to become acquainted with the critical features before looking at any specimen in isolation.

Females. Fig. 1. Again, the findings of Lempke (1965; 1966) and Urbahn (1966; 1967) have already been discussed above. However, Goater, Ronkay & Fibiger (*op. cit.*) suggest that separation is possible using different features: in *chrysitis* the ostium bursae is more or less parallel-sided with the distal edge not incised, so that it is either straight or a gentle curve; the ductus bursae is comparatively shorter; the bursa copulatrix tends to be rounded. In *stenochrysis* the ostium bursae is slightly tapered at the anterior end and is slightly incised at the distal edge so it tends towards being V-shaped; the ductus bursae is comparatively longer and more or less tubular; the bursa copulatrix tends to be ovoid, taller than broad. My own observations suggest that in three-dimensional view, floating free in liquid, the bursa of *chrysitis* appears to be entered by the ductus at its apex so that the bursa lies entirely anterior to the join whilst in *stenochrysis* the bursa appears to be entered by the ductus to one side so that there may appear to be a portion of the bursa that lies posterior to the join. This feature is shown, though not emphasised, by Nowacki (1998) but my experience is that it may be lost when a permanent slide is made.

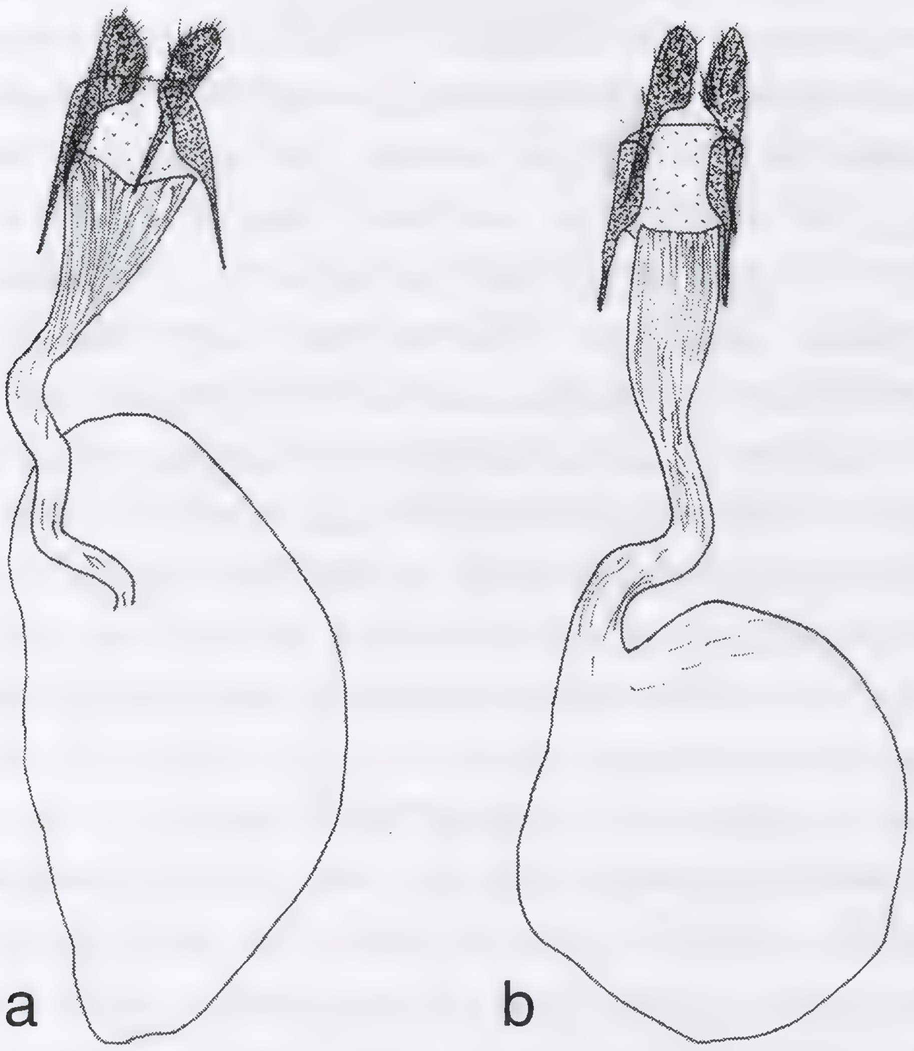

Figure 1. Female genitalia of *Diachrysia* species. **a:** *D. stenochrysis*; **b:** *D. chrysitis.*

British Isles distribution

I have, in my own collection, '*stenochrysis*' specimens from South Essex, Hertfordshire, East Norfolk and South Lancashire (Greater Manchester). Although I have recorded moths over a far wider area of Britain my attention was not until 2009 specifically drawn to *Diachrysia* and, since I do not collect every moth that comes to the lamps, it is not possible to cite negative findings.

Discussion

In summary, therefore, it seems that:

- Moths with two widely separated vertical bars of brassy-green colour on each forewing are true *chrysitis*; this is not in dispute;

- Moths with these two bands joined clearly and distinctly to create an 'H-shaped' brassy-green pattern have been referred to as f. *juncta*;
- Moths referable to f. *juncta* are regarded by some authors as a separate species, called *Diachrysia tutti*;
- Examples of *tutti* in which the cross-bar of the 'H' is at least 3 millimetres wide may be referable to the Eastern Palaearctic species *stenochrysis*;
- Intermediate forms in which the cross-bar of the 'H' is poorly defined also exist.

The notion of there being two species of Burnished Brass in Britain has not found universal acceptance amongst the largely amateur entomological community. However, this seems largely to be based on unsupported 'gut reaction' rather than any evidence and the situation has not been helped by the fact that in recent years there have been several misguided attempts to 'split' a number of common noctuid moths into more than one species. Schadewald (1992), for example, recognized *Autographa messmeri* and *A. voelkeri* as cryptic species within the Silver Y *A. gamma* (L.) and subsequently (Schadewald, 1992a) he also defined *Phlogophora lamii* as a 'split' of the Angle Shades *P. meticulosa* (L.). Both these decisions were ill-judged and all the segregates have been dumped into the dustbin of synonymy by all subsequent researchers (e.g., Goater et al, *op. cit.*; Fibiger & Hacker, 2007). These unfortunate attempts to upset the taxonomic *status quo* have rendered the bulk of the British amateur entomological community unnecessarily defensive! The purpose of this present paper is, therefore, not to rule on the matters, but to draw to the attention of a wider audience the fact that taxonomic confusion exists within *D. chrysitis* in Britain, so that new data can be gathered in order to fully evaluate the situation.

It is perhaps worth pointing out that the scientists who have agreed that *stenochrysis* and *chrysitis* are separate species are amongst the larger number that have also dismissed the earlier splits of both *gamma* and *meticulosa* (as well as a great many other taxonomic *faux pas*). This should, at least, convey the message that the situation has been examined critically and the resultant decision based on scientific evidence rather than unsupported opinion in coalition with undue haste. The two taxa *chrysitis* and *stenochrysis* probably represent expression of parallel evolution, following which the two species have expanded their distributional range to the extent that these have now more or less completely overlapped. The fact that the two are morphologically similar is, of course, no guide. Attention is drawn, for example, to the similarities between *Plusia festucae* (L.) and *P. putnami* (Grote) and to the complete morphological overlap between *Mesapamea secalis* (L.) and *M. didyma* (Esper). A rather more scientific approach is required to determine the true validity of *stenochrysis*.

Whatever its actual status might be, however, it is clear that the taxon currently referred to as *D. stenochrysis* is present throughout Europe – including Britain. It will be of great interest for the British amateur entomological community to undertake breeding programs, ecological, phenological, distributional and other studies to investigate these taxa in minute detail (although my reservations on breeding have been expressed above, it would be interesting to see any results that are nevertheless forthcoming). To facilitate the distributional studies, it will be necessary for the programmers of the various computer recording packages to add this taxon to their species lists; 'splits' can always be recombined later if opinion so dictates, but separating out the 'splits' from previously 'lumped' information may be impossible. A 'Bradley & Fletcher' number of 2434a is suggested. Input of large numbers of candidate specimens of both 'species' from across the length and breadth of Britain to the DNA bar-coding project would also seem desirable.

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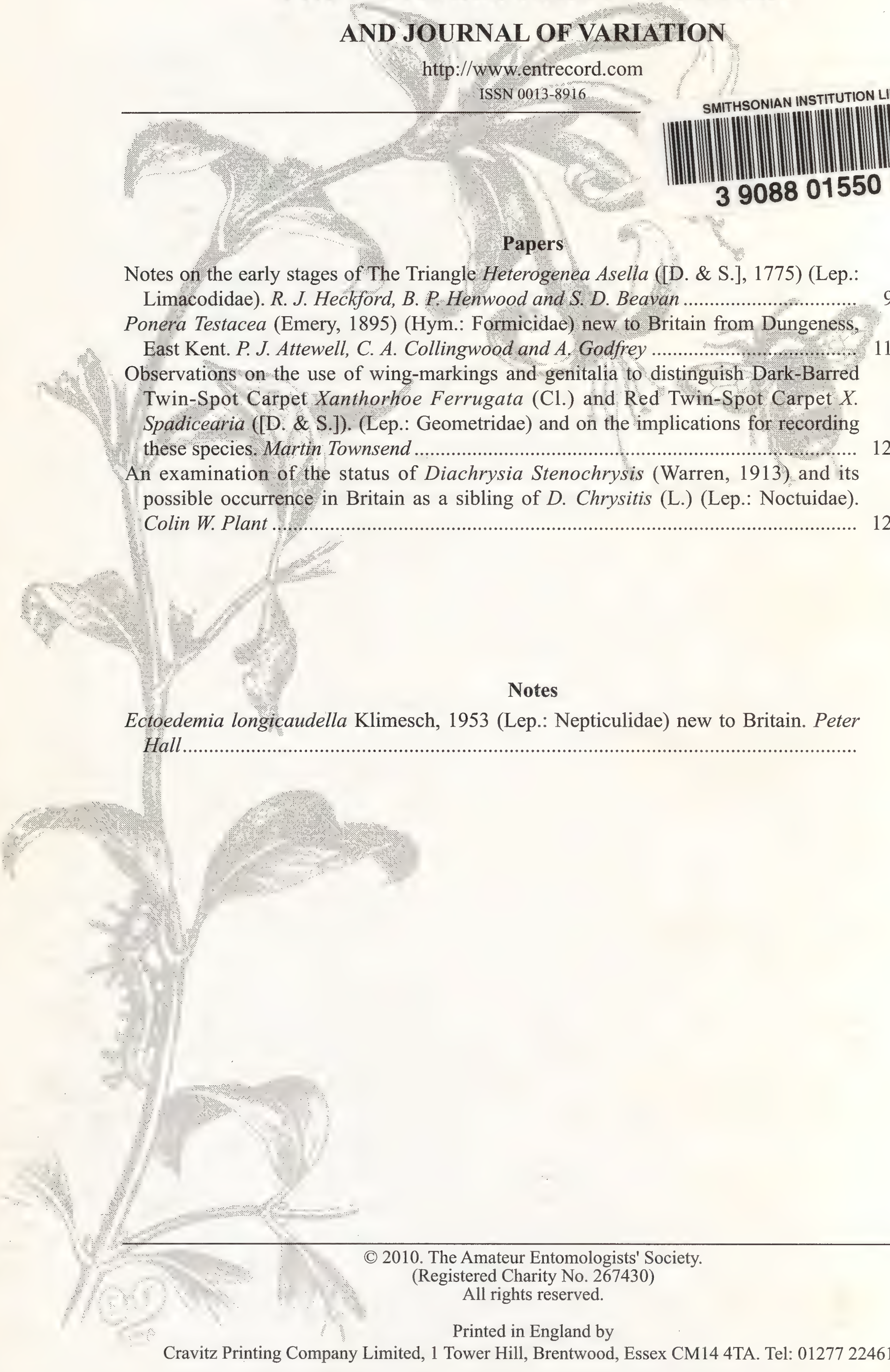

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CNEPHASIA PUMICANA (ZELLER, 1847) (LEP.: TORTRICIDAE) STAT. REV. NEWLY RECOGNISED AS BRITISH

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Abstract

Cnephasia pumicana (Zeller, 1847) stat. rev. is distinguished from *C. pasiuana* (Hübner, 1796-99), differences in the male and female genitalia are described and illustrated and the occurrence of *C. pumicana* in Britain is discussed.

Keywords: *Cnephasia*, Tortricidae, *pumicana*, Cereal tortrix.

Introduction

Moths of the genus *Cnephasia* Curtis are notoriously difficult to identify from their external morphology. It is often necessary to make a genitalia preparation to be sure of the identity. Whilst examining such preparations JRL observed a striking difference between two males of this complex. The paper by Chambon & Genestier (1980) illustrated and described these differences and suggested we had two species under the name of *pasiuana*. *C. pumicana* had been sunk into the synonymy of *C. pasiuana* by Razowski (1989), although Karsholt & Razowski (1996) mention that this synonymy was not accepted by Jaroś (1993). It was also included as a distinct species in Novak & Liška (1997), Szabóky *et al.* (2002) and in Aarvik (2004). It remains listed as a synonym of *pasiuana* in the popular work by Razowski (2002). Further dissections were made of British specimens of this complex and we confirm that consistent differences between these taxa exist.

Description

Cnephasia pumicana (Zeller, 1847) **stat. rev.** Plate 16

Externally this species is uniform grey in colour sometimes verging on beige, with only a hint of the characteristic *Cnephasia* pattern of markings. The shade of grey can vary from pale to dark, but most often it is pale. The wingspan is 15-20mm, overlapping with that of *pasiuana* although often slightly smaller. The indistinct pattern makes definite distinction from *pasiuana* impossible without dissection. Pale specimens can also be confused with *C. genitalana* Pierce & Metcalfe although the latter species is on the wing in late July and August, later than *pasiuana* and *pumicana.*

In the male genitalia (Plate 15, Figs.1 & 2) the most constant distinguishing feature is the length and shape of the aedeagus. That of *pumicana* is about two-thirds of the length of *pasiuana,* it is bent at about one third of its length from the apex in *pasiuana* but evenly and gently curved in *pumicana.* There is some variation in other characters of both species, but these are summarised in the following table:

character	**gnathos arms**	**gnathos tip**	**valva**	**sacculus**	**aedeagus**	**caulis**
pasiuana	broad	large	cucullus rounded	abruptly bent downwards, fold less than half length	bent	thick
pumicana	narrow	moderate	cucullus pointed	slightly bent downwards, fold more than half length	gently curved	thin

The "fold" of the sacculus in the above table is the distinct sclerotisation along the costal edge near the apex.

The female genitalia (Plate 15, Figs. 3-6) are more difficult to distinguish. The most constant feature is the shape of the antrum, in *pumicana* it is long with parallel sides, in *pasiuana* it is short and asymmetrical.

Life history

The early stages have not been observed in Britain, but on the Continent the larva is recorded as feeding on cereals, grasses, legumes and flax. Chambon & Genestier (1980) state that it is highly polyphagous, 22 host plants being recorded. The larva has pinacula which are concolorous with the body whereas those of *pasiuana* are darker than the body. According to Chambon (1979) and Glas (1991) the eggs are laid on nearby trees or other suitable surfaces; the larva then overwinters in its first instar, then in early spring it leaves its hibernaculum and moves to a suitable host plant, sometimes blown by the wind. It feeds up and pupates in June on the host plant, on cereals often in the ear. Adults are on the wing in late June and July. English specimens have been taken from 24 June to 8 August, the majority mid-late July.

Distribution

The earliest British record that has been checked thus far is from East Ham, London, on 8 August 1986 (C. W. Plant, pers. comm.). Other specimens that have been examined are from counties south east of a line from the Wash to Southampton Water as shown in the map (Fig. 1). The adjacent map (Fig. 2) shows all records of *C. pasiuana* but since not all have been checked it is possible that there may be included some which are *pumicana.* Abroad *pumicana* has been recorded from Austria, Cyprus, Czech Republic, France, Germany, Greek islands, Hungary and Slovakia. The distribution may be wider, but not recorded because of confusion with *C. pasiuana.*

Discussion

There are no confirmed records of *C. pumicana* in England prior to 1986 which suggests that this species is a recent colonist rather than an overlooked, long-

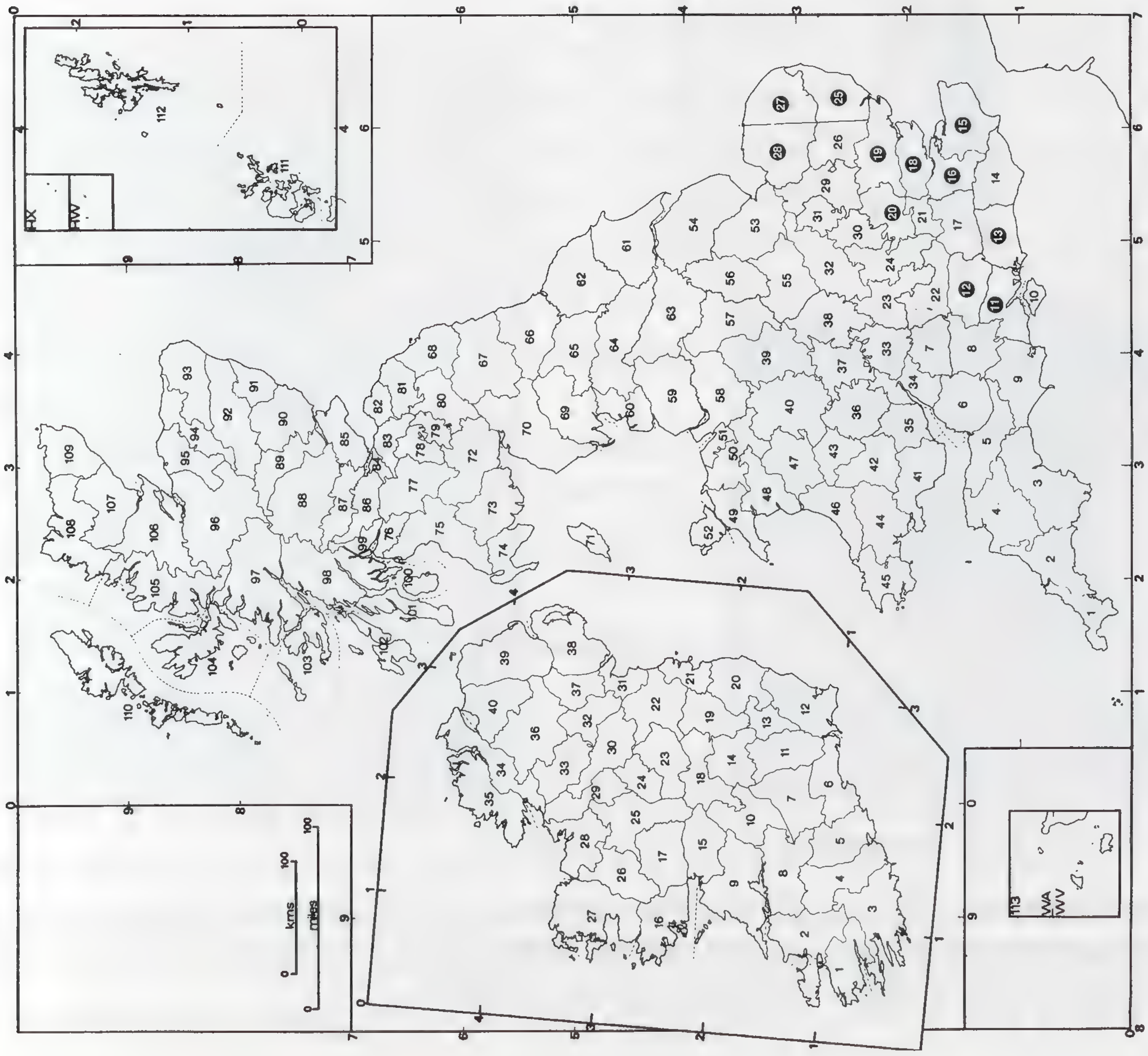

Fig. 1. Known British Isles distribution of *Cnephasia pumicana*.

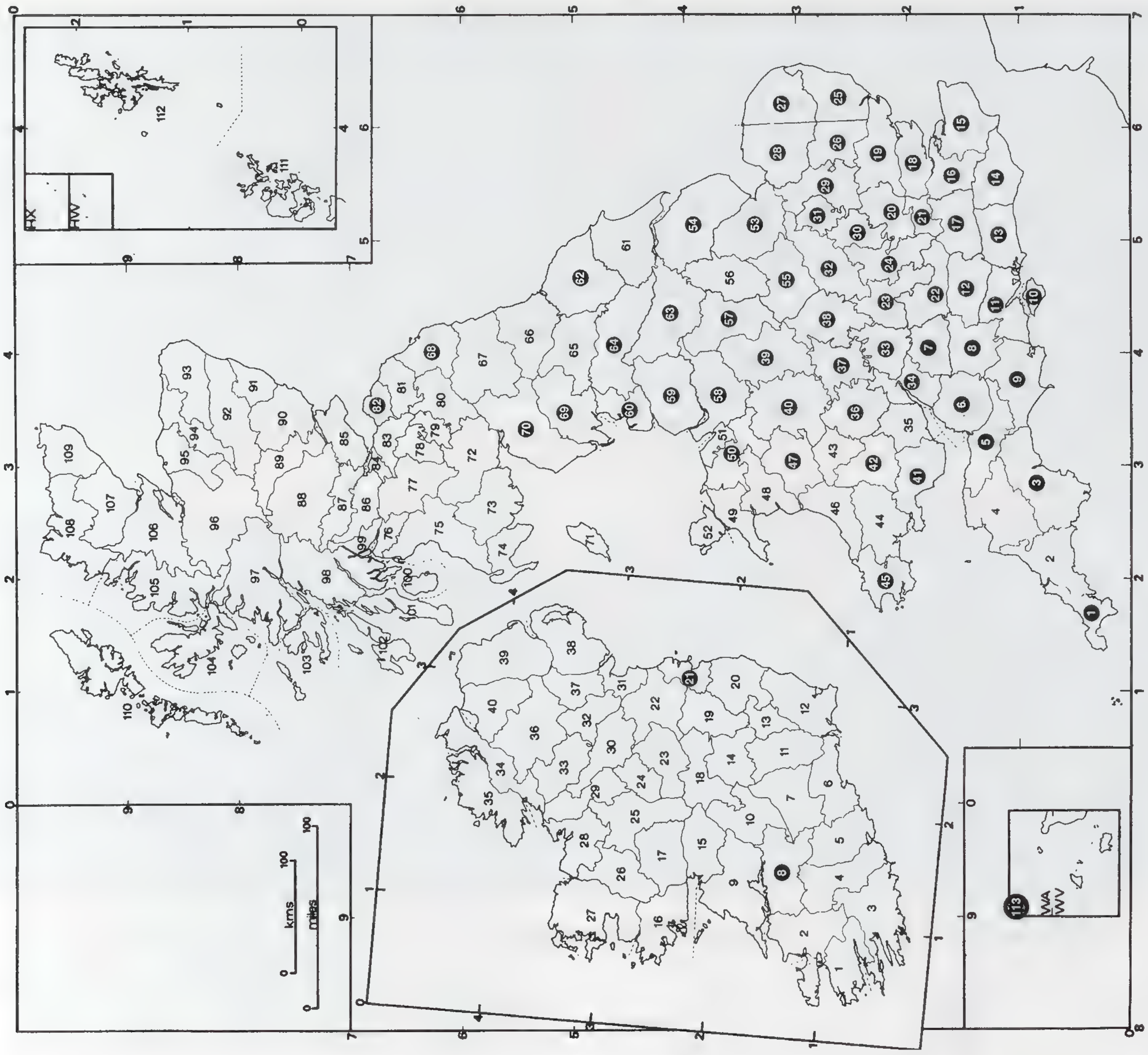

Fig. 2. Known British Isles distribution of *Cnephasia pasiuana*.

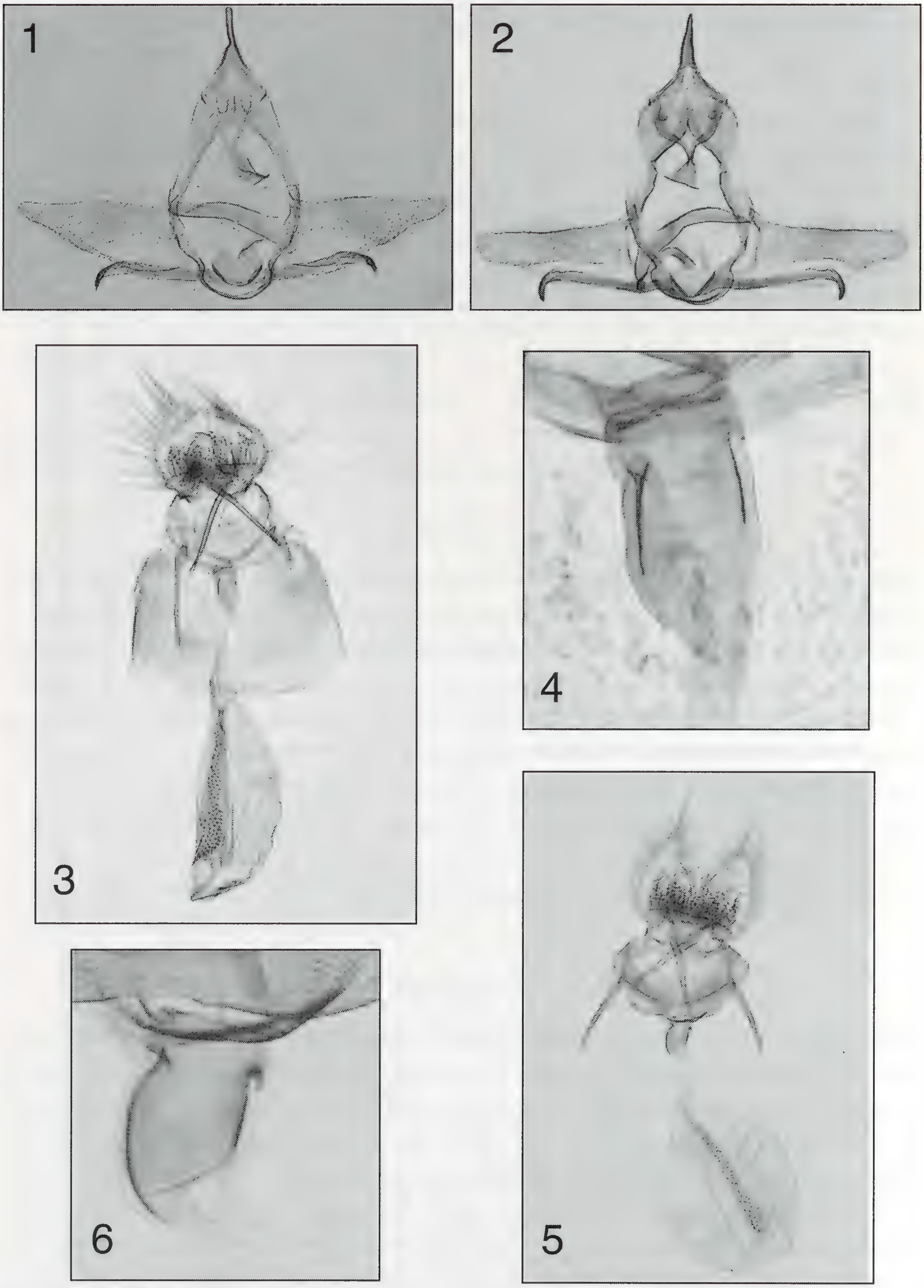

Plate 15. Characters of the genitalia of *Cnephasia* species.

1. *Cnephasia pumicana*, male; 2. *Cnephasia pasiuana*, male; 3. *Cnephasia pumicana*, female; 4. *Cnephasia pumicana*, female – ostium and antrum enlarged; 5. *Cnephasia pasiuana*, female; 6. *Cnephasia pasiuana*, female – ostium and antrum enlarged.

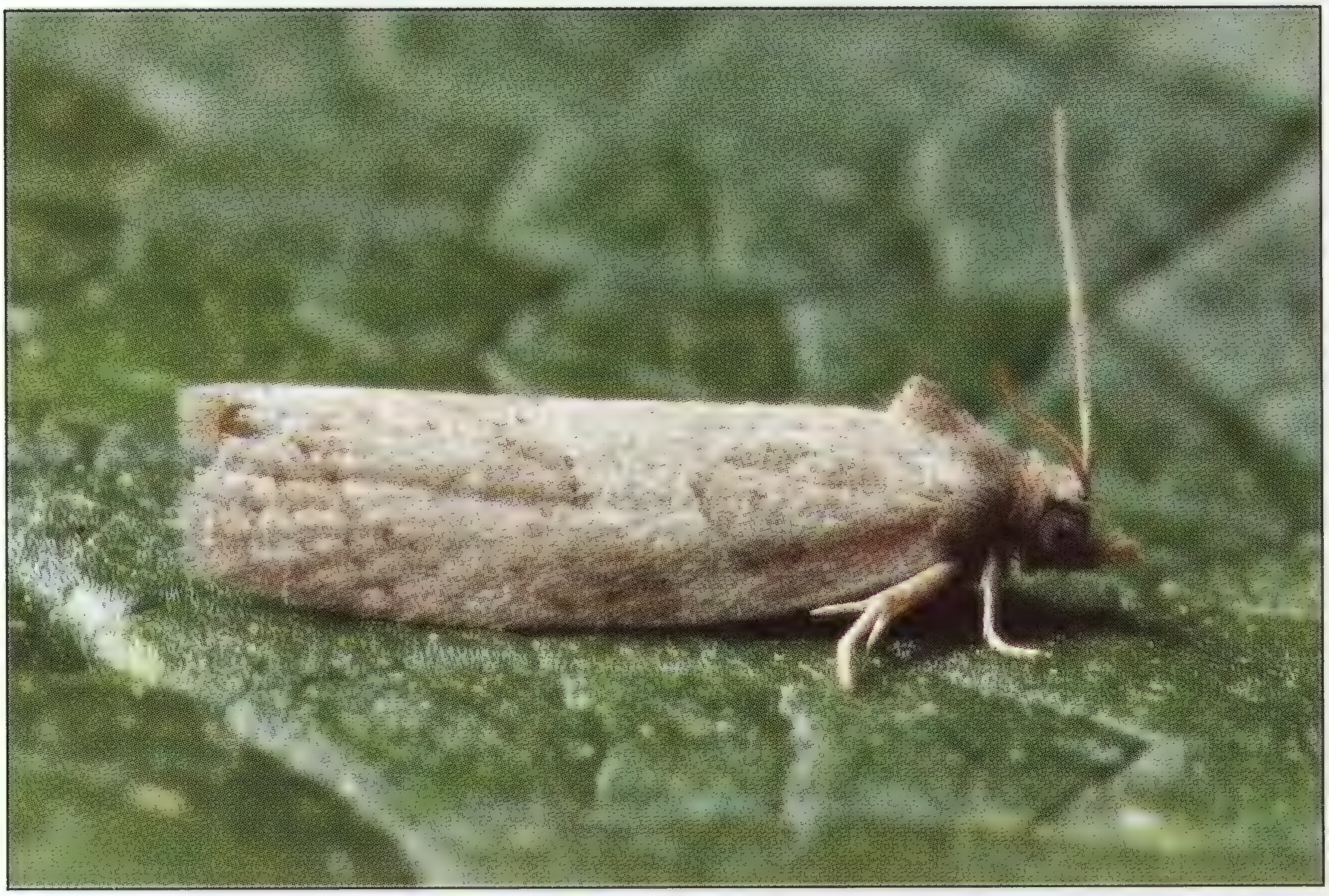

Plate 16. *Cnephasia pumicana* (Zeller). Rushmere St Andrew, Suffolk, 1 August 2004, Leg. J. B. Higgott. Photograph © J. B. Higgott.

established resident. The fact that all records to date are from south-east England adds weight to this argument. A survey of crop pests was carried out by Ferguson *et al.* (1997) and revealed no specimens, even though the authors were aware of its presence in France. For this reason it is probable that older records of *C. pasiuana* are likely to be correctly referred to that species. However we stress that examination of genitalia is desirable for all specimens; our studies have revealed specimens of *C. genitalana* and *C. asseclana* ([Denis & Schiffermüller]) among series labelled *C. pasiuana.*

In the British list we suggest that *Cnephasia pumicana* is placed immediately after *C. pasiuana* with checklist number 1022a. Since it has been in the economic literature it has been given a vernacular name the Cereal Tortrix.

Acknowledgements

We are grateful to Leif Aarvik (Oslo) for showing us various references and for his support and encouragement; Apollo books (Stenstrup, Denmark), for permission to publish the maps that were prepared for *The Moths and Butterflies of Great Britain and Ireland*; to Kevin Tuck (Natural History Museum, London) for information about relevant specimens; to Jeff Higgott (Rushmere St Andrew) for the fine photograph of *Cnephasia pumicana*; to Ian Thirlwell (Portsmouth) for proof-reading and technical help with photographs, and to the following for

information about the occurrence of *C. pumicana* and *C. pasiuana* in the British Isles: Keith Bland (Edinburgh), Ken Bond (Cork), Jon Clifton (Hindolveston), Brian Goodey (Colchester), Richard Moore (Catherington), Colin Plant (Bishops Stortford), Bob Palmer (Storrington), Steve Palmer (Preston) and Phil Sterling (Weymouth).

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The ant-lion *Euroleon nostras* (Geoffroy in Fourcroy, 1785) (Neur.: Myrmeleontidae): New to Essex

On 24 July 2006, JB received a telephone call from Reg Arthur reporting a possible example of an ant-lion from St Osyth. Thanks to the good offices of Mrs P. Smith, the live insect was delivered to Colchester Museum where it was provisionally identified by JB as *Euroleon nostras*. This was later confirmed, from a digital photograph, by Colin Plant, National Recording Scheme Organiser for Neuroptera and allied insects.

The ant-lion, a female as indicated by the absence of anal cerci, had been found on the morning of 23 July 2006 at rest on a garden washing line at Wigboro Wick Farm, St. Osyth, Essex (OS grid reference TM 116141; VC 19) by CA. A moth trap had been run in the garden previous night, but no noteworthy migrant Lepidoptera had been recorded.

Following the discovery of a colony of *E. nostras* at Minsmere in Suffolk (Plant, 1998. Investigations into the distribution, status and ecology of the ant-lion *Euroleon nostras* (Geoffroy in Fourcroy, 1785) Neuroptera: Myrmeleontidae) in England during 1997. *Suffolk Natural History* **1998**, 69-79) and more recently in Norfolk (Northfield, 2006. The Ant-lion *Euroleon nostras* (Fourcroy) (Neur.: Myrmeleontidae) in North Norfolk. *Entomologist's Rec. J. Var*. **118**(5), 229-230) it is interesting to speculate as to whether this individual was a stray from one of the Suffolk colonies or whether it might be from an unknown Essex colony relatively nearby.

The nearest report to St. Osyth would appear to be that of an adult taken in a m.v. trap at Bawdsey, Suffolk on 17 August 2004 (Deans, 2004. Moths at Bawdsey mid-April to September 2004. *Suffolk Moth Group Newsletter* number **34**) a distance from St Osyth of around 30 km as the crow flies.

Possible suitable sandy habitat for the species does, however, exist within two kilometres north of Wigboro Wick, in the grounds of St Osyth Priory. A search for larval pits at this site would be well worthwhile, especially as there is a chance that development pressures may affect the priory grounds in the near future.

After a few days of inactivity the ant-lion died and is now preserved in the collections of Colchester Museum. The authors are unaware of any further records of ant lions in the County between 2007 and 2009.

Thanks are due to Reg Arthur for notification of CA's discovery, Mrs P. Smith for delivering it to the museum, Clive Atkins for agreeing to donate the specimen and Colin Plant for confirming its identity.— JERRY BOWDREY, Colchester and Ipswich Museum Service, 14 Ryegate Road, Colchester, Essex CO1 1YG & CLIVE ATKINS, Wigboro Wick Farm, St.Osyth Essex CO16 8ER.

A striking aberrant form of *Catocal nupta* (L.) (Lep.: Noctuidae)

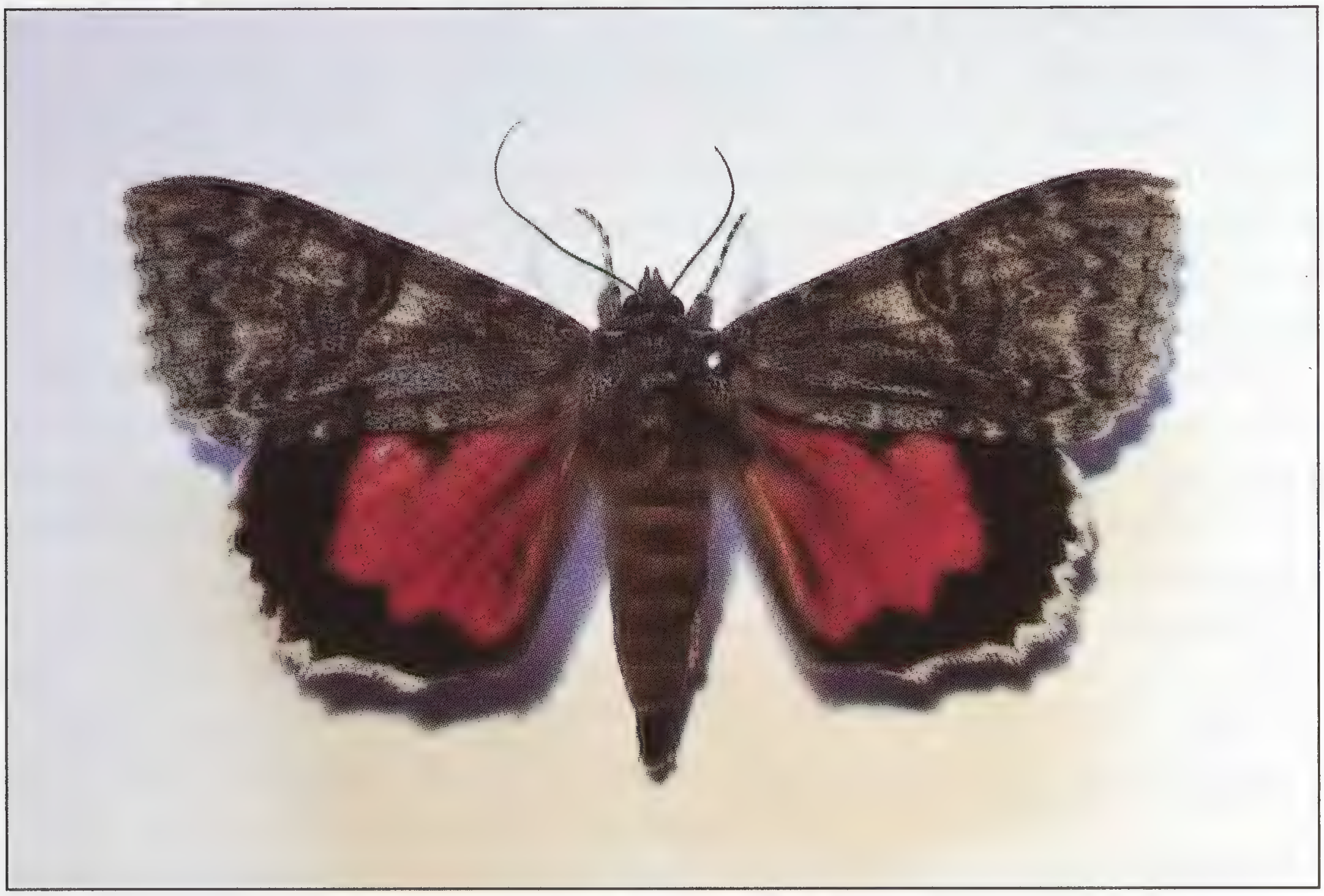

Plate 17. *Catocala nupta* (L.) aberrant form. Thornton Cleveleys, Lancashire, 4.vii.2009. G. Band.

Whilst searching the walls of the Marsh Hill Craft Village at Thornton Cleveleys, Lancashire on 4 August 2009, I came across an example of the Red Underwing *Catocala nupta*. As I had not seen this species before in the local area, I took the moth as a voucher specimen. Upon setting it, I noticed that the black inner band of the hind wing was absent (Plate 17). I found a further twelve examples of this species in the vicinity of Thornton Cleveleys, but all of these were typical in appearance.— GERARD BAND, 29 Tarn Road, Thornton Cleveleys, Lancashire FY5 5AY.

Some new moth records for Co. Limerick, Ireland

On 30 June 1994, during the course of an impromptu meeting at JWL's house in Tralee, when both authors met up with local botanist Tom Ryall, it was decided to utilise the day for a field trip. After a brief discussion, we felt that a sojourn to Borrigone in Co. Limerick might prove worthwhile.

Borrigone is very similar to the Burren, though on a substantially more limited scale, with small areas of limestone pavement and wonderful open meadows carpeted with wild flowers and hosting an abundance of insect life. The mystery is that the area has not been more extensively worked, both botanically and entomologically. There is even an ancient and unsubstantiated record of the Pearl-bordered Fritillary *Boloria euphrosyne* (L.), mentioned by E. S. A. Baynes in his

A revised catalogue of Irish Microlepidoptera (Classey, 1964). Although our field trips here are sporadic at best, we have recorded Little Blue *Cupido minimus* Fuessly, Dingy Skipper *Erynnis tages baynesi* Huggins and larvae of Marsh Fritillary *Eurodryas aurinia hibernica* Birchall. In recent years, we have been somewhat disillusioned to note that this site has been drained and ploughed. Just another nail in the coffin of *Eurodryas aurinia*! Wonderful and all that Borrigone is as a collecting site it is, unfortunately, sandwiched in between the industrial monstrosity that is the Aughinish Alumina Plant on the banks of the River Shannon and the continuous quarrying of the district itself which some days leaves a light sprinkling of limestone dust carpeting the vegetation.

Shortly after our arrival, we were out in the meadows and were surprised to encounter good numbers of Chimney Sweeper *Odezia atrata* (L.), our first encounter with this species hereabouts. Even more unexpected was a large colony of Transparent Burnet *Zygaena purpuralis sabulosa* Trem., believed to be restricted in distribution in Ireland to the Burren region of Cos. Clare and Galway and northwards to Ballinrobe and Partry, Co. Mayo. It also occurs on Inishmore in the Aran Islands (*Moths and Butterflies of Great Britain and Ireland*, Vol. 2; Harley Books; 1985). Skinner (1985. *Colour Identification Guide to Moths of the British Isles*; Viking) maintains that three specimens (taken by R. C. Faris), allegedly at Curracloe and Kilmore Quay, Co. Wexford in 1950 require verification. Interestingly, Baynes (1964), states "there is a record also from 'near Limerick' (A. H. Sperring)" – we have been unable to unearth any further information relating to this record, nor does any subsequent literature appear to make reference. This discovery at Borrigone is significant, and a notable extension of its known Irish distribution. Another bonus was a solitary specimen of the Speckled Yellow *Pseudopanthera macularia* (L.), taken by JWL. We have encountered this species regularly in the Burren but this seems to be the first record for Co. Limerick. One final revelation awaited us as we headed towards the car at the end of a productive excursion. Tom Ryall pointed out two large but empty webs produced by larvae of the Small Eggar *Eriogaster lanestris* (L.) on a roadside hedge of Blackthorn *Prunus spinosa*. Both writers have brought this species through from larvae found at Newtown Castle, near Ballyvaughan in the Burren so it is an insect with which we are rather well acquainted.

It has only been during the past severe winter, during many nights of research, that we discovered that there are apparently no prior confirmed records of these moths from Co. Limerick. On that basis, we felt it necessary to put these findings in print at the earliest opportunity, albeit it sixteen years after the fact!— MICHAEL O'SULLIVAN, 20 St. James Gardens, Killorglin, Co. Kerry & JOHN W. LAVERY, Holly Cottage, Ballahadigue, Listowel, Co. Kerry.

Cydia pactolana (Zeller, 1840) (Lep.: Tortricidae): new to Buckinghamshire

On 5 June 2010, during a Buckinghamshire Invertebrate Group moth trapping evening at Turville Heath in south Bucks, a single specimen of *Cydia pactolana* was caught in a mv moth trap. Identification was not confirmed until some days later when it was dissected and shown to be a male (Plate 18). This is a county first for Bucks and the tally of vice counties having recorded this moth now stands at seven (J. R. Langmaid pers. comm.).

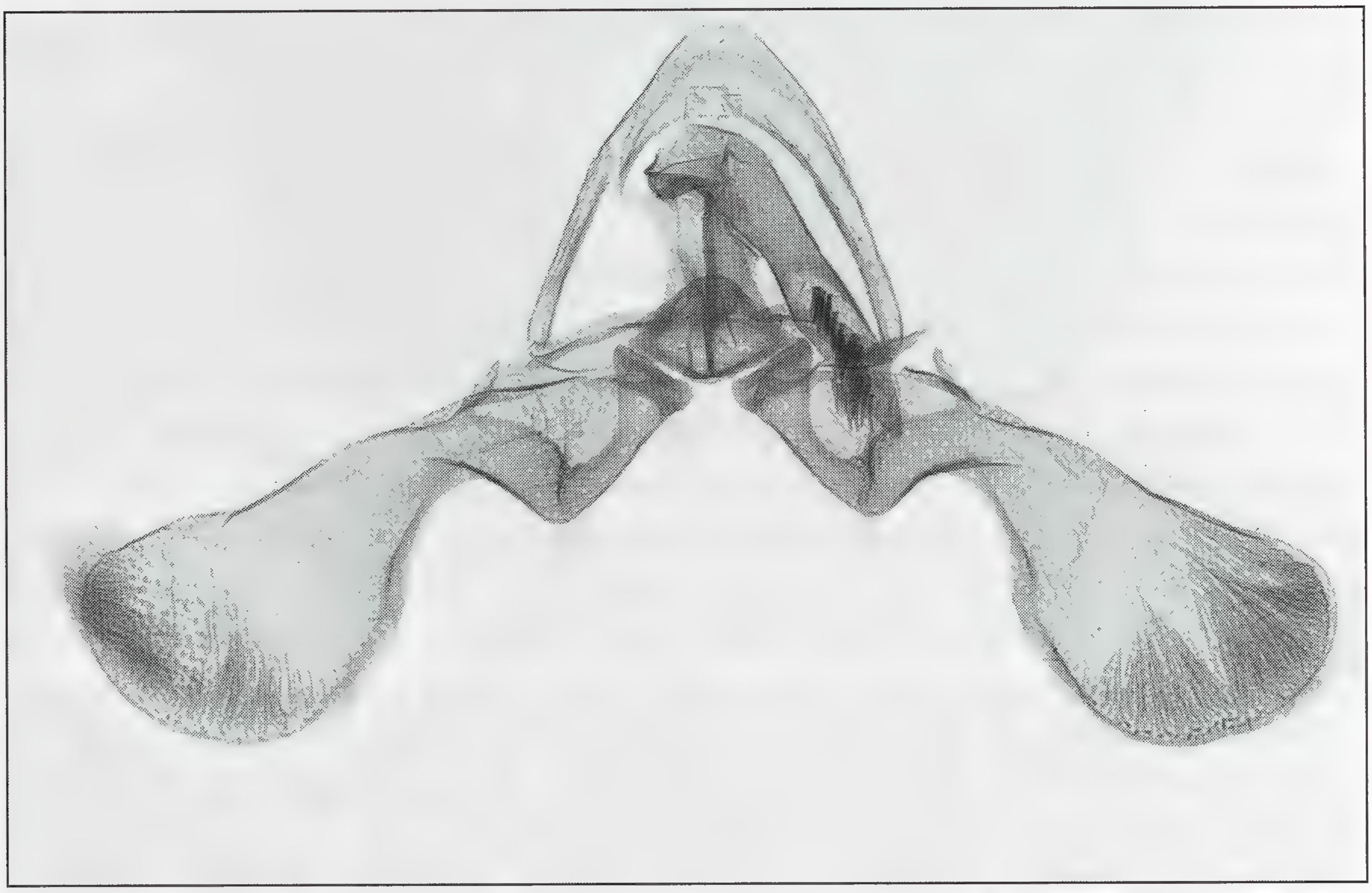

Plate 18. *Cydia pactolana* (Zell.) Turville Heath, Buckinghamshire. 5.vi.2010. Male genitalia.

It was first found in the UK in Hampshire on 12 June 1965 at Alice Holt (North Hampshire, VC 12) (Goater, 1974. *The Butterflies and Moths of Hampshire and the Isle of Wight.* Classey; Bradley, Tremewan and Smith, 1979. *British Tortricoid Moths: Tortricidae: Olethreutinae* pp. 276-277). Since then four specimens have been taken in Botley Wood (South Hampshire, VC11) on 1 June 1976, 19 June 1983, 7 June 1984 and 2 June 1985 (Goater, 1992. *The Butterflies and Moths of Hampshire and the Isle of Wight: additions and corrections.* UK Nature Conservation No. 7. *JNCC*; Agassiz, 1984. Microlepidoptera – A Review of the Year 1983. *Ent. Rec.* **96**: 262; Agassiz, 1985. Microlepidoptera – A Review of the Year 1984. *Ent. Rec.* **97**: 213). In Surrey and Berkshire it was recorded in Windsor Forest in 1971 by T. G. Winter where nine adults were bred from *Picea abies* (Agassiz, 1983. Microlepidoptera – A Review of the Year 1982. *Ent. Rec.* **95**: 188 & 194; Baker, 1994. *The Butterflies and Moths of Berkshire,* p130). In Bedfordshire a single moth was tapped from conifers at Worley's Wood on 22 June 1986 by David Manning. David exhibited the specimen at the BENHS

Annual Exhibition in 1986 (D. Manning, pers. comm). In Worcestershire it was recorded on 10 June 2004 at Stoke Prior by J. Rush (Langmaid & Young, 2006. Microlepidoptera Review of 2005. *Ent. Rec.* **118**: 262).

The adult is thought to be univoltine, flying from May to July. Females lay their eggs on the bark of branches and shoots of *Picea* and *Larix*. Larvae feed in the bark and the cambium. It is also known as the Spruce Bark Tortrix because of this. Although records in the United Kingdom are few and far between and restricted to the south of the country, on the continent it is widespread.

I would like to thank Brian Goodey, John Langmaid, Andrew Mitchell for their assistance with the identification. John Langmaid, David Manning, Mike Wall and Mark Parsons with help on past records and finally to Tony Harman for permission to trap on the site.— PETER HALL, Melanthia, Chiltern Road, Ballinger Common, Buckinghamshire HP16 9LH (E-mail bucks.moths@virgin.net).

Pammene giganteana **(Peyerimhoff, 1863) (Lep.: Tortricidae) new to Buckinghamshire (VC 24)**

Between 20.20 hours and midnight on 6 April 2010 I ran a single 15watt actinic and two 125watt m.v. moth traps along the main ride through Shabbington Wood, a part of Bernwood Forest in Buckinghamshire. The weather was quite reasonable with a partial overcast, a light southerly breeze and a temperature of 12°C at the start dropping to 9°C when I packed up. The traps brought in the usual woodland fare for the time of year, *Orthosia* spp accounting for the vast majority of the 843 moths that were attracted to the lights. Of 28 different species recorded, six were micro-moths. One of these was a tortrix which I assumed to be *Pammene argyrana* although the white dorsal marking seemed less distinct than I remembered from previous sightings. Five individuals came to the m.v. traps and three of them were taken home to be photographed and examined more closely the following morning. In the light of day it transpired that they were slightly larger than the normal size range for *Pammene argyrana*. Internet photographs of *Pammene giganteana*, a species I had not seen before, seemed a better match for both size and markings. All three individuals were therefore retained and dispatched to Peter Hall for genitalia inspection. Following dissection by Peter they did indeed all prove to be males of *P. giganteana* and were the first records of this species for Buckinghamshire (Martin Albertini, County Moth Recorder, pers. comm.). The moth is probably under-recorded because of its early flight period (March-April) in oak woodland. Like *P. argyrana*, its larvae feed inside galls (oak apples) of various species of hymenoptera.— DAVE WILTON, 25 Burnham Road, Westcott, Aylesbury, Buckinghamshire HP18 0PL.

Macro Moth Status Changes in West Lothian (VC84)

The Watsonian Vice County of West Lothian (or Linlithgowshire) is the smallest in the UK covering about 327 square km and remarkably does not include a single complete 10 kilometre square. The species total of Macro Moths recorded in the vice county currently stands at 329. Its coastline, formed by the inner Forth estuary, does not include any notable rocky or sand dune stretches. The modern administrative county boundary includes a portion of the Pentland Hills, but the vice county does not benefit from this habitat. The county is dominated by human activities and there are only small pockets of relatively undisturbed habitat including some raised bogs and a wooded gorge along a portion of the Western boundary. One or two species find the spoil heaps from the oil shale industry, known locally as Bings, particularly attractive. Amenity planting of Hazel *Corylus avellana*, Poplar *Populus* sp. and Blackthorn *Prunus spinosa* which are rare natives in the area, may be starting to positively affect local biodiversity.

Over the last ten years there has been a significant increase in moth trapping and recording in the county. This has included regular trapping in three gardens in Linlithgow with rural and suburban characteristics. There has also been an extensive program of trapping across the county's major habitats. This recent activity has provided the opportunity to compare the current moth diversity with an historical record set for the county. This record set has recently been computerised by Greg Fitchett based on the late E. C. Pelham-Clinton's records from a period through the 1960s and 1970s when he lived in the county. The vast majority of his records were from his garden near Winchburgh. His house is in a small cluster of dwellings in an agricultural area typical of large parts of the county. Of the county's 33,000 macro moth species records, nearly half were from ECP- C's observations.

Twenty-six macro moth species that were recorded by ECP-C (Table 1), but have not been recorded in the last 10 years. As indicated in the Comment column in the table some of these are one-off records, but quite a number of others are species recorded regularly by ECP-C that no longer appear to occur in the county.

Fifty-one species that were not recorded by ECP-C have been recorded since the year 2000 (Table 2). Some of these are due to specific habitat requirements where ECP-C had not recorded in such locations. A number of species were, however, recorded in ECP-C's garden, as presumed wanderers, well away from appropriate habitats. Others in this list are due to range expansions since 1981 when he left the area. The table includes a comment on their current county status.

It is worth noting that the Scottish Moths List has four species indicated as *Common* which have not yet been recorded in the county. These are Red Twin-spot Carpet *Xanthorhoe spadicearia*, Early Tooth-striped *Trichopteryx carpinata*, Anomalous *Stilbia anomala* and Nut-tree Tussock *Colocasia coryli*.

Code	Common Name	Comment on records (with Scottish List status)
1744	Grey Mountain Carpet *Entephria caesiata*	Three ECP-C records. One record since ECPC period in 1996. Possibly still in low numbers at 1996 site.
1749	Dark Spinach *Pelurga comitata*	One record. Possibly a wanderer.
1757	Spinach *Eulithis mellinata*	Regular. Limited foodplant availability; national decline.
1770	Chestnut-coloured Carpet *Thera cognata*	ECP-C noted possibly adventive from Juniper transplanted from highlands. Not now thought to be present.
1771	Juniper Carpet *Thera juniperata scotica*	ECP-C noted possibly adventive from Juniper transplanted from highlands. Not now thought to be present.
1811	Slender Pug *Eupithecia tenuiata*	Regular. Likely to be present, but not recorded in last 10 years
1816	Toadflax Pug *Eupithecia linariata*	Regular. Foodplant very local in VC84. Recent searches for larvae unsuccessful.
1823	Netted Pug *Eupithecia venosata venosata*	Two records. Not known to breed in VC84, but does so just over border in VC83. No evidence that status has changed.
1835	White-spotted Pug *Eupithecia tripunctaria*	Regular. Likely to be present, must be very local.
1856	Larch Pug *Eupithecia lariciata*	Common despite no significant stands of larch near ECP-C garden. Likely to be present, but not recorded in last 10 years despite some effort trapping in Larch habitats.
1897	V-Moth *Macaria wauaria*	Regular. Limited foodplant availability; national decline. Not now thought to be present.
1972	Convolvulus Hawk-moth *Agrius convolvuli*	One record. Uncommon migrant so may occur periodically.
1992	Small Elephant Hawk-moth *Deilephila porcellus*	One record, so probably a wanderer. (Local, mainly lowland and East coast.)
2038	Muslin Footman *Nudaria mundana*	Occasional. (Widespread in South and East.) Presumed to have declined.
2080	Square-spot Dart *Euxoa obelisca*	Three records. (Very local; rocky coasts.) Presumed to have declined.
2105	Dotted Rustic *Rhyacia simulans*	One record. Possible record 2000. Some records from east Stirlingshire 20 miles NE. Possibly present in very small numbers in Bing habitat.
2145	Nutmeg *Discestra trifolii*	One record. (Migrant in East; possibly a scarce resident in SE.) Presumed only likely as a rare migrant.
2203	White-speck *Mythimna unipuncta*	One record. (Scarce migrant.) Presumed only likely as a rare migrant.
2233	Golden-rod Brindle *Lithomoia solidaginis*	One record with no local breeding habitat. (Widespread but maybe decreasing.) Not found recently despite trapping in appropriate habitat.
2255	Feathered Ranunculus *Polymixis lichenea*	One record presumed wanderer. (Very local in SW.) Not thought to breed.
2268	Suspected *Parastichtis suspecta*	Six records. (Widespread but infrequent.) Presumed to have declined.
2275	Dusky-lemon Sallow *Xanthia gilvago*	Regular. Limited mature foodplant availability; national decline.
2312	Olive *Ipimorpha subtusa*	Regular despite little foodplant habitat. (Local and scarce in South.) Not found despite trapping at amenity planted Aspen and other poplars.
2314	Dingy Shears *Parastichtis ypsillon*	One record. (Scarce, perhaps only stray or migrant.)
2360	Ear Moth *Amphipoea oculea*	Occasional. Likely to be present, but not recorded in last 10 years
2437	Golden Plusia *Polychrysia moneta*	One record. (Local and scarce in South; declining.) Not thought to be present.

Table 1. Moths recorded in VC84 by E. C. Pelham-Clinton, but not seen in the last ten years.

Code	Common Name	Observer(s)	Status Comment
0015	Orange Swift *Hepialus sylvina*	Multiple	Local including garden trapping so likely to have increased.
0171	Narrow-bordered Five-spot Burnet *Zygaena lonicerae latomarginata*	GF, MC	Very local, restricted habitat. Likely to be part of national range expansion.
1631	December Moth *Poecilocampa populi*	MC	Very local. No evidence for increase in population, as ECP-C garden lacks nearby mature trees.
1637	Oak Eggar *Lasiocampa quercus quercus*	MC	Local and only seen at specific sites at distance from ECP-C garden although ECP-C did observe Wood Tiger at occupied site.
1638	Fox Moth *Macrothylacia rubi*	MC, GF	Local and somewhat surprising that ECP-C didn't observe at least as evening flyer given his diurnal recording.
1648	Pebble Hook-tip *Drepana falcataria*	MC	Widespread now and so possible range expansion.
1707	Small Dusty Wave *Idaea seriata*	MC, CF	Local. Possible range expansion as recent records all in gardens.
1708	Single-dotted Wave *Idaea dimidiata*	MC	Single recent record. No real evidence for increased population.
1766	Blue-bordered Carpet *Plemyria rubiginata rubiginata*	MC	Local only where Alder present. It is not surprising that ECP-C wouldn't have trapped this species.
1769	Spruce Carpet *Thera britannica*	Multiple	Common. Good evidence for range expansion.
1796	Pale November Moth *Epirrita christyi*	MC, GF	Widespread. Likely range expansion.
1801	Barred Carpet *Perizoma taeniata*	CF	One record in garden. Probably just a very scarce species.
1819	Mottled Pug *Eupithecia exiguata muricolor*	MC	Local. No real evidence for increased population.
1822	Marsh Pug *Eupithecia pygmaeata*	GF, MC	One known breeding site visited diurnally by ECP-C, but few food plants. One other record presumed a late wanderer.
1826	Triple-spotted Pug *Eupithecia trisignaria*	MC	One record. Unlikely wanderer to ECP-C garden.
1827	Edinburgh Pug *Eupithecia intricata millieraria*	JPH	Single record.
1851	Golden-rod Pug *Eupithecia virgaureata*	Multiple	Common. Presumed range expansion.
1862	Double-striped Pug *Gymnoscelis rufifasciata*	Multiple	Common. Presumed range expansion.
1866	Manchester Treble-bar *Carsia sororiata anglica*	MC, GF	Local. Surprising ECP-C didn't find during diurnal visits to sites where currently present.
1868	Lesser Treble-bar *Aplocera efformata*	GF, MC	Widespread. Presumed range expansion.
1879	Seraphim *Lobophora halterata*	MC	Local, but only found at amenity plated Aspen and Grey Poplar.
1883	Yellow-barred Brindle *Acasis viretata*	MC, GF	Local, but regular. Possible range expansion.
1910	Lilac Beauty *Apeira syringaria*	GF, MC	Local, restricted habitat. Likely range expansion from South.
1913	Canary-shouldered Thorn *Ennomos alniaria*	MC, JPH	Locally common. Likely range expansion from South.
1932	Spring Usher *Agriopis leucophaearia*	MC	One site. No real evidence for change in population.
1940	Satin Beauty *Deileptenia ribeata*	GF, MC	Common, restricted habitat.
1942	Dotted Carpet *Alcis jubata*	MC	One site probably not visited by ECP-C.
1957	White-pinion Spotted *Lomographa bimaculata*	MC	First record in May 2010. Previous Scottish Records much further South West in Dumfries and one two days later in Fife. Range expansion from South.
1960	Early Moth *Theria primaria*	MC	One site. No real evidence for change in population.

1969	Grey Scalloped Bar *Dyscia fagaria*	MC	Local in specific habitat well away from ECP-C garden. No real evidence for change in population.
1984	Humming-bird Hawk-moth *Macroglossum stellatarum*	GF	Single recent record.
1994	Buff-tip *Phalera bucephala*	MC, CF	Widespread. Likely range expansion.
2010	Scarce Prominent *Odontosia carmelita*	MC	Widespread. Possible increase in population.
2039	Red-necked Footman *Atolmis rubricollis*	CF, MC	Three recent records. Likely range expansion
2078	Least Black Arches *Nola confusalis*	MC	Local. Possible increase in population.
2135	Heath Rustic *Xestia agathina*	MC	Widespread including some garden records. Possible population increase.
2149	Silvery Arches *Polia trimaculosa*	MC	Multiple individuals at one site.
2171	Marbled Coronet *Hadena confusa*	CF	Single recent record. Known current breeding population 10km from ECP-C garden.
2182	Small Quaker *Orthosia cruda*	Multiple	Common. Likely increase in population.
2186	Powdered Quaker *Orthosia gracilis*	MC	Very local. Multiple records single site. No evidence of population change.
2189	Twin-spotted Quaker *Orthosia munda*	Multiple	Common. Likely increase in population.
2195	Delicate *Mythimna vitellina*	CF	Rare migrant.
2236	Pale Pinion *Lithophane hepatica*	MC	Fifteen records since 2008 (of which 12 in Spring 2010) at seven sites. Definite range expansion.
2240	Blair's Shoulder-knot *Lithophane leautieaari hesperica*	MC	Single record 2009. Definite range expansion.
2243	Early Grey *Xylocampa areola*	MC, JPH	Widespread but scarce. Presumed range expansion.
2324	Northern Arches *Apamea zeta assimilis*	MC	One record one site. No evidence of population change.
2335	Slender Brindle *Apamea scolopacina*	GF, MC	Several recent records. Presumed range expansion.
2339	Tawny Marbled Minor *Oligia latruncula*	MC	Only one determined record. ECPC did determine other *Oligia* species and so presumed not present during that period.
2369	Bulrush Wainscot *Nonagria typhae*	Multiple	Local. Possible range expansion as appears to disperse quite widely.
2391	Silky Wainscot *Chilodes maritimus*	MC	Very local. Unlikely that ECP-C would have recorded this species. No real evidence of population change.
2403	Bordered Straw *Heliothis peltigera*	CF, JPH	Rare migrant.
2422	Green Silver-lines *Pseudoips prasinana*	Multiple	Widespread. Likely range expansion.
2423	Oak Nycteoline *Nycteola revayana*	DD, MC, GF	Local. Possible population increase, but difficult species to monitor.
2447	Scarce Silver Y *Syngrapha interrogationis*	MC	Several records at one site. No evidence for population change.
2484	Pinion-streaked Snout *Schrankia costaestrigalis*	MC, GF	Widespread. Presumed range expansion.

Table 2. Species not recorded by Pelham-Clinton in VC84, but which have been recorded by others since 2000.

The Scottish Macro Moth Status List includes 17 species, recorded both by ECP-C and more recently, as Local or Very Local. It is therefore worth noting their VC 84 status (Table 3). Of these species it appears that Brindled Green and Lunar Underwing have become less common in the county; for the other species there is no clear picture.

Code	Common Name	ECP-C Status	2000s status
0017	Common Swift *Hepialus lupulinus*	Common	Common
1754	Phoenix *Eulithis prunata*	Common	Common
1804	Barred Rivulet *Perizoma bifaciata*	Local	Local
1806	Pretty Pinion *Perizoma blandiata*	Widespread	Widespread
1825	Lime-speck Pug *Eupithecia centaureata*	Widespread	Widespread
1839	Bordered Pug *Eupithecia succenturiata*	Local	One record
2088	Heart and Club *Agrotis clavis*	One record	One record
2104	Northern Rustic *Standfussiana lucernea*	Five garden records	Four records, all on oil shale Bings.
2155	Dot Moth *Melanchra persicariae*	One record	Three records
2164	Broad-barred White *Hecatera bicolorata*	Common	Local. Likely population decrease.
2242	Sword-grass *Xylena exsoleta*	Four records	One record
2248	Brindled Green *Dryobotodes eremita*	Regular	One record. Likely population decrease.
2270	Lunar Underwing *Omphaloscelis lunosa*	Regular	Local. Likely population decrease.
2293	Marbled Beauty *Cryphia domestica*	Six records	Widespread
2300	Old Lady *Mormo maura*	Two records	Local
2362	Butterbur *Hydraecia petasitis*	Two records	Regular near foodplant
2375	Large Wainscot *Rhizedra lutosa*	Uncommon	Uncommon

Table 3. Apparently uncommon species recorded in VC84 by Pelham-Clinton and also more recently by others.

At an individual species level it is hard to be sure whether distribution and population changes are real or apparent. The comparison has had to be based on records largely from one rural garden with more diverse recording activities more recently. However, some allowance can be made by taking account of habitat distribution, geographical proximity and recording approaches. Considering the changes as a whole, it appears that there have been more gains than losses to the macro moth resident list for the Watsonian Vice County of West Lothian over the last 30 to 40 years.

Many areas across the UK have benefited from E. C. Pelham-Clinton's recording across a number of taxa. In West Lothian, we are lucky that he was resident here for many years. I would also like to acknowledge a number of observers who have made significant numbers of records since 2000: Duncan Davidson, Greg Fitchett, Catherine Fowler and James Pearce-Higgins whose initials are recorded in Table 3. Greg's achievement in computerising the ECP-C macro moths is much appreciated. Thanks also to Roy Leverton who provided helpful advice during the composition of this article. — MARK CUBITT, 12 Burgh Mills Lane, Linlithgow, West Lothian EH49 7TA (E-mail: moths@cubes.f9.co.uk).

Discestra trifolii **(Hufn.) (Lep.: Noctuidae), the Nutmeg, in West Sutherland**

During August 2009, a family holiday was taken at Sangobeg, on the north coast of mainland Scotland, about three miles east of Durness. I ran a Robinson m.v. trap nightly during the break and also a 22-watt battery-run Actinic trap on favourable nights in the nearby sand dunes or on herb-rich coastal cliff grassland.

The Robinson trap was placed against a sheltered west-facing wall of the cottage in which we were staying and on the first night (9 August 2009) contained a large number of moths amongst which was a single *Discestra trifolii*. Subsequent discussion with the County Recorder for VC108, Sue Agnew, as well as Tom Prescott and Roy Leverton, indicated this to be a moth new to VC108 (West Sutherland). Previous occurrences of Nutmeg in northern Scotland and the Northern Isles are suspected to be associated with migration. Sue advised that little if any indications of migration had been noted at the time although, as she explained, moth recorders are rather scarce on the ground this far north.

The trap contents on the first night also included well over 100 *Amphipoea* sp. (ear moth types) – quite an impressive sight. A small sample of males of varying markings and size were retained for subsequent dissection and all proved to be *Amphipoea lucens* (Large Ear).

My thanks to Sue Agnew, Roy Leverton and Tom Prescott for their assistance in providing information relating to the status of this moth in northern Scotland. — STEPHEN PALMER, 137 Lightfoot Lane, Fulwood, Preston, Lancashire PR4 0AH. (E-mail: s.palmer12@btopenworld.com).

Juniper shieldbug *Cyphostethus tristriatus* (Fabr.) (Het.: Acanthosomatidae) in Perthshire, Scotland

The Juniper Shieldbug was first found in Scotland by Harry Eales in April 2007 on the Lammermuir Hills in East Lothian (2007, *Het News*, 2nd Series, no. 9: 11-12). Subsequently, in 2008 Nick A. Littlewood found Juniper Shieldbug at three sites in Aberdeenshire in north-east Scotland (*Ent. Rec.* **121**: 5-6).

On 24 May 2009, I found two females of *Cyphostethus tristriatus* by beating juniper *Juniperus communis* at Birkenburn, about 3 km north of Dunkeld in Perthshire (O.S. grid reference NO 027453, Vice-county 89, East Perth). Both specimens were taken by beating a mature female Juniper bush that was bearing berries. The juniper woodland at this site consisted of two stands of mature Juniper, each with an area of about one hectare occurring on slopes on both sides of a wet hollow. The shieldbugs were taken from the more southerly of the two stands at an altitude of about 165 m on a north-easterly aspect. The other stand of juniper had a south to south-easterly aspect.

There are no published records of *C. tristriatus*, additional to those given above, in the Scottish Insects Record Index at the Royal Museums of Scotland at Granton, Edinburgh; nor are there any Scottish specimens of juniper shieldbug in the collections at Granton. On 4 October 2009 I confirmed the presence of *C. tristriatus* near Hopes Reservoir in the Lammermuir Hills. A total of 15 specimens of juniper shieldbug were beaten from mature female juniper bushes with berries at three sites on both sides of Hopes Water, below the reservoir (OS grid references NT 555625, NT 552620 and NT556624, vice-county 82, Haddington) at altitudes ranging from 230 m to 260 m and on easterly-facing and north westerly-facing slopes. The specimens consisted of eleven adults (five males and six females) and four nymphs (one 3rd instar and three 4th instars).

The juniper woodland with juniper shieldbug at Birkenburn near Dunkeld lies between the other two known sites or clusters of sites for juniper shieldbug in Scotland but is further west, lying about 100 km in a north-westerly direction from the site in the Lammermuir Hills and about 60-90 km in a south-westerly direction from the sites in Aberdeenshire. The nearest stands of juniper scrub to those at Birkenburn were respectively about 1.5 km and 3 km distant. The Birkenburn stands of juniper are isolated semi-natural woodland relicts occupying part of an open area surrounded largely by extensive plantations of non-native conifers. The population of juniper shieldbug near Dunkeld may be assumed to be indigenous, relict and long-standing.— D. Horsfield, 131 (3F1) Comiston Road, Edinburgh EH10 6AQ.

INSECTS OF WAVENEY FOREST (FRITTON WARREN) IN EAST NORFOLK

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Abstract

Waveney Forest in East Norfolk is a coniferous plantation with remnant heathland which is threatened by gravel extraction proposals. Surveys have revealed that the forest, in particular the dry and wet heathland, provides habitat for 25 butterfly (Lepidoptera) sp., 15 dragonfly/damselfly (Odonata) sp., and 12 grasshopper/cricket (Orthoptera) sp. The forest is notable for its widespread population of White Admiral *Limenitis camilla* L. and declining butterflies such as Brown Argus *Plebeius agestis* D. & S. and Wall Brown *Lasiommata megera* L. Where the forest fringes the River Waveney, there is a population of the protected Norfolk Hawker *Aeshna isosceles* Müller dragonfly.

Keywords: Waveney Forest, heathland, declining species, protected species, Lepidoptera, Odonata, *Aeshna isosceles*.

Introduction

Waveney Forest in East Norfolk is a large area (approximately 130 hectares in size) of coniferous woodland (known locally as Fritton Woods). The forest has been identified by Norfolk County Council (NCC, proposal is MIN 38 in the Minerals and Waste Site Allocations Development Plan) as one of a hundred potential sites for future gravel extraction to provide material for building works in the area. Waveney Forest is one of the few large wooded areas in east Norfolk (generic grid ref: TG 4600) and is extremely valuable as a recreational facility for local people. The degree of local opposition to the plans is evidenced by over 10,000 people signing a recent petition against the proposals. An initial article highlighting the wildlife value of the forest (concentrating on insects) has been published (Gardiner, 2008) and it is the aim of this paper to update the current status of the insect fauna on site.

Waveney Forest

It is not just the recreational aspect of the forest that is valuable, the area is also of high importance for wildlife. Waveney Forest was formerly known as Fritton Warren, and inspection of pre-1900 maps show that the warren was open with relatively few trees. The warren was planted with conifers (mainly pines) after World War II, and the band of heathland that ran from St. Olaves to Belton was largely destroyed. A large Natterjack Toad *Epidalea calamita* population was present on the warren until the 1960s (Trevor Beebee pers. comm.); presumably it disappeared as a result of the habitat destruction arising from large-scale conifer planting. The presence of such a rare amphibian illustrates just how extensive the heathland of Fritton Warren must have been in former times.

Fortunately, some heathland was left unplanted and survives as wide rides in the forest (I assume as firebreaks and for easy access to trees by foresters). A quite large area of Ling *Calluna vulgaris* and Bell Heather *Erica cinerea* remains and is predictably good for reptiles such as the Adder *Vipera berus* and Common Lizard *Zootoca vivipara.* The high wildlife value of the site has been recognised through designation of areas as Local Wildlife Sites (LWS). The open heathland areas in Waveney Forest (LWS reference number: 1427) and the remains of Fritton Warren South (LWS ref: 1426) are designated, the former mainly for its stands of Ling and Bell Heather. Nearby Belton Common (OS grid reference: TG 478019, LWS ref: 1428), which is situated approximately 2 km to the north-east of Waveney Forest, also has remnant heath and is connected to the forest by green corridors such as Sandy Lane and a dismantled railway line. A further heathland LWS is situated in Belton (Howard's Common, ref: 1429), therefore, the heathland in Waveney Forest forms a mosaic across several local sites. A large area of Waveney Forest lies within the Broads Authority's Executive Area, and there are extensive reedbeds fringing the forest where it meets the River Waveney.

The area of Waveney Forest is approximately 130 ha, however, only 6 ha (4.6% of site) of heathland remains, most of it is largely unmanaged, but occasional mowing in places restricts the development of scrub. Due to this mowing there is Ling in its building, mature and degenerate phases, interspersed with dry (with Bell Heather) and wet heath (with Purple Moor-grass *Molinia caerulea*). There is plentiful bare earth despite the encroachment of Birch *Betula pendula* scrub.

Due to the possible development of the site for gravel extraction, local naturalists have been surveying the forest for as many different taxa as possible. It is the aim of this paper to document some of the more easily identified orders such as butterflies (Lepidoptera), dragonflies/damselflies (Odonata) and grasshoppers/crickets (Orthoptera). The lists of species should allow an assessment of the value of the site for insects, and the data is placed in context by a comparison with the fauna of nearby Belton Common.

Desk Studies

Before any field surveys were undertaken at the site, a range of published and unpublished sources were consulted. I refer the reader to Allard *et al.* (2000) for a detailed list of butterflies and dragonflies associated with the area. Many of the records in this paper have been gathered from this source. A record of the Norfolk Hawker *Aeshna isosceles* Müller from 2008 was obtained from the British Dragonfly Society website. Dr Pam Taylor, the Norfolk Dragonfly Recorder, provided extra records for Belton Common. The Norfolk Orthoptera Recorder, David Richmond, sent grasshopper records for the forest and surrounding area, and Andy Brazil, the Norfolk Butterfly Recorder, sent additional sightings for

Waveney Forest, which lengthened the species list. I also found the Lowestoft Bird Club website (*www.home.clara.net/ammodytes/*) a very useful source of information on the insects of Waveney Forest.

Records have been collected from the past 10 years (1999-2009) to allow an assessment of the current status of taxa. It must be noted that the published lists of species that follow may under-represent the total number of species due to the ease with which insects can be overlooked at a site. There may also be other records known to local naturalists that were not picked up by the desk-based studies.

Field Surveys

Waveney Forest and Belton Common were surveyed on 16 September 2008 and 4-5 July 2009 by the author, to obtain field sightings of insects mentioned in the literature and on the websites. Butterflies, dragonflies/damselflies, and grasshoppers/crickets were recorded on these site visits.

Results

Butterflies (Lepidoptera)

A total of 25 butterfly species have been recorded in Waveney Forest since 1999 (Table 1). At nearby Belton Common 26 species have been recorded, including Small Heath *Coenonympha pamphilus* L. and Green Hairstreak *Callophrys rubi* L., butterflies apparently not found in Waveney Forest. The highlight of the butterfly fauna of Waveney Forest is undoubtedly the White Admiral *Limenitis camilla* L., an insect that is declining and has a UK Biodiversity Action Plan (BAP). The insect would appear to be fairly widespread in the forest, I saw it at five locations on 5 July 2009. Amusingly, I was describing the butterfly to several twitchers, when one fluttered by on the breeze. Previous sightings of the butterfly appeared to show that it was more localised in the forest.

The other UK BAP butterfly recorded at Waveney Forest was Wall Brown *Lasiommata megera* L., which is declining fast in Norfolk. Purple Hairstreak *Neozephyrus quercus* L. has been recorded from areas of regenerating native woodland (with Oak *Quercus robur* and Rowan *Sorbus aucuparia*), indeed I saw two on 5 July 2009 flying around the canopy of mature Oaks on one of the rides that connects with Sandy Lane. Purple Hairstreak was found at Belton Common, and has been seen along Sandy Lane which connects the common with Waveney Forest. This would suggest that the butterfly is using Sandy Lane (in essence a green lane) as a corridor, allowing dispersal between the two sites. Given the importance of the two interconnected sites for butterflies, and the fact that many declining species such as White Admiral and Wall Brown may suffer from the loss of their Waveney Forest colonies, I suggest that the gravel extraction plans will be nothing short of an ecological disaster for these butterflies.

Dragonflies and damselflies (Odonata)

The dragonfly fauna is yet another reason why destruction of the forest may be disastrous for insects. Odonata commonly seen in the forest included Large Red Damselfly *Pyrrhosoma nymphula* Sulzer, Four-spotted Chaser *Libellula quadrimaculata* L., Broad-bodied Chaser *Libellula depressa* L. and Hairy Dragonfly *Brachytron pratense* Müller (Table 1). Undoubtedly, the star of the forest is the Norfolk Hawker *Aeshna isosceles* Müller, an extremely rare dragonfly in the UK, afforded protection under Schedule 5 of the Wildlife and Countryside Act (1981), listed as Endangered in the Odonata Red Data List (Daguet *et al.* 2007) and added to the UK BAP list in 2007. The Norfolk Hawker was recorded from the forest on 24 May 2008 (record reported on the British Dragonfly Society (BDS) website), and has also been occasionally sighted at Belton Common (Allard *et al.* 2000). I came across a male adult hawking around the reedbeds adjoining the Waveney (area known as the Staith, OS grid reference: TG 459013) on 4 July 2009. The male frequently rested on emergent vegetation, which allowed observation of its clear wings and distinctive triangular marking.

The total number of Odonata species recorded in Waveney Forest (15 sp.) is notable in a county context, comparing favourably with Holme Dunes (15 sp.) and Geldeston (17 sp.), all sites which are listed as dragonfly hotspots on the Dragonflies of Norfolk website (*www.norfolkdragons.co.uk*). Indeed, Dr Pam Taylor suggests that the site qualifies as a possible *Key Site for Dragonflies* as it meets the Vice-County Diversity Threshold of 11 species recorded in the past 10 years (Taylor, pers. comm.). If evidence of breeding and abundance were collected it would probably qualify for a higher status.

Grasshoppers and crickets (Orthoptera)

The dry heathland in the forest is important for insects such as Mottled Grasshopper *Myrmeleotettix maculatus* Thunberg, which was recorded from the rides by the Norfolk County Recorder for Orthoptera, David Richmond (Richmond, 2001), and by the author on 5 July 2009. This grasshopper is rare in east Norfolk, its only other known sites being nearby Belton Common and the Gorleston-Hopton cliffs. The forest heaths are also important for Meadow Grasshopper *Chorthippus parallelus* Zetterstedt, a widespread grasshopper nationally, but one that is not often found in east Norfolk. Richmond (2001) believes that this flightless grasshopper has not been able to colonise these areas of former marine transgression, where Lesser Marsh Grasshopper *Chorthippus albomarginatus* De Geer (commonly found in and around the forest) is the dominant species. I came across a previously unrecorded species, the Common Green Grasshopper *Omocestus viridulus* L., on 4 and 5 July 2009. The distinctive reeling stridulation was heard in areas of wet heathland with an abundance of Purple Moor-grass, often the grasshopper was present in heathy vegetation beneath the pylons, where scrub has been kept clear for access. The grasshopper is uncommon in east Norfolk (Richmond, 2001) and may depend on the persistence of wet heathland at sites such as Waveney Forest for survival in the area. The Common Green Grasshopper has not been recorded from Belton Common, making the Waveney Forest heaths even more valuable.

The forest is fringed by marshes on its western boundary with the River Waveney, and in these grasslands, Short-winged Conehead *Conocephalus dorsalis* Latreille and Slender Groundhopper *Tetrix subulata* L. are found. Skeleton Wood contained healthy populations of Speckled Bush-cricket *Leptophyes punctatissima* Bosc and Oak Bush-cricket *Meconema thalassinum* De Geer, which can be easily beaten from regenerating native trees in these areas.

In total, 12 species of Orthoptera have been recorded from the forest, which is extremely notable in the county context. Indeed, if the heathland of nearby Belton Common is considered, the area also supports Common Groundhopper *Tetrix undulata* Sowerby and the scarce Great Green Bush-cricket *Tettigonia viridissima* L. (seen in Belton in 2005). A total of 14 species (51% of the British list of 27 species) makes the heathlands and woodlands in the Waveney Forest area notable in a national context (Marshall & Haes, 1988), comparing favourably with the Central Cotswolds (12 sp.), Chichester Harbour (14 sp.) and the Somerset Levels (16 sp.). Waveney Forest and Belton Common are connected by a dismantled railway line and a green lane (Sandy Lane) and there is potential for breeding between individuals from both sites. Indeed, Mottled Grasshopper survives in small populations at both sites, and interbreeding may be important for the genetic diversity of the grasshopper in the area. The loss of Waveney Forest would leave the species isolated at Belton Common and may lead to inbreeding (and the associated loss of genetic diversity) at this site.

The diversity of the orthopteran fauna of the Waveney Forest area is highlighted by a tantalising record of the nationally rare Large Marsh Grasshopper *Stethophyma grossum* L. from Belton Bog in 1911 (Richmond, 2001). Unfortunately, this grasshopper appears to have become extinct in Norfolk, although it is just possible that it may remain in boggy areas at Waveney Forest or Belton Common.

Other insects

Whilst surveying on 5 July 2009, I flushed up several Green Tiger Beetles *Cicindela campestris* L. (Coleoptera), which are characteristic of open sandy habitats including heathland. It is widespread and locally common in the UK, and is indicative of the value of the remnant heath in the forest. The heathland was also alive with bees and wasps (Hymenoptera: Aculeata), I noted both Buff-tailed Bumblebee *Bombus terrestris* L., and its related brood parasite, the Vestal Cuckoo Bee *Bombus vestalis* Geoffroy. I'm sure further surveys by specialists would reveal a good diversity of Hymenoptera. Froghoppers were abundant in the open areas, with the most numerous species appearing to be the Common Froghopper *Philaenus spumarius* L.

Table 1. Insect species recorded at Waveney Forest and Belton Common since 1999.

Species	**Waveney Forest**	**Belton Common**
LEPIDOPTERA		
Aglais urticae L.	x	x
Anthocharis cardamines L.	x	x
Aphantopus hyperantus L.	x	x
Callophrys rubi L.		x
Celastrina argiolus L.	x	x
Coenonympha pamphilus L.		x
Gonepteryx rhamni L.	x	x
Inachis io L.	x	x
Lasiommata megera L.*	x	x
Limenitis camilla L.*	x	x
Lycaena phlaeas L.	x	x
Maniola jurtina L.	x	x
Neozephyrus quercus L.	x	x
Nymphalis antiopa L.	x	
Ochlodes sylvanus Esper	x	x
Pararge aegeria L.	x	x
Pieris brassicae L.	x	x
Pieris napi L.	x	x
Pieris rapae L.	x	x
Plebeius agestis D. & S.	x	x
Polygonia c-album L.	x	x
Polyommatus icarus Rottemburg	x	x
Pyronia tithonus L.	x	x
Thymelicus lineola Poda	x	x
Thymelicus sylvestris Poda	x	x
Vanessa atalanta L.	x	x
Vanessa cardui L.	x	x
ODONATA		
Aeshna cyanea Müller	x	x
Aeshna grandis L.	x	x
Aeshna isosceles Müller**	x	x
Aeshna mixta Latreille	x	x
Brachytron pratense Müller	x	x
Calopteryx splendens Harris	x	
Coenagrion puella L.	x	x

SOCIETY MATTERS

NEW AES MEMBERSHIP BENEFIT

AES members now qualify for a **25% discount** on the first year of individual membership of the Society of Biology (www.societyofbiology.org). Further details are available from the Hon. Secretary.

AES ANNIVERSARY WINDOW STICKER

Enclosed with this mailing you should find a window sticker to mark the 75th anniversary of the Society.

JOIN THE 'BIG SOCIETY'!

Charitable volunteering is increasingly popular these days, and is often seen as a good way to gain new skills and experience. It is also something the new coalition government is keen to promote in its 'Big Society' initiative!

1. Aes Council Opportunities:

We currently have four vacancies on Council (the full complement is 18 members). Council members are trustees of the charity and meet on a Friday evening in London four times each year. If you would like to join this happy band and help set the future direction of the Society please contact the Hon. Secretary (email: secretary@amentsoc.org; tel. 07733 444731) or any other Council member for further information.

The current incumbents range from those who have served the Society for decades to those who have joined very recently. Whilst expert entomologists and conservationists are welcome, so are those whose primary expertise lies elsewhere – such as in organisational matters, planning or running events, or just those with plain old common sense who would like to make a difference and 'put something back'.

2. Promoting the Society: Members who would like to support the Society but do not wish to become trustees could usefully display information leaflets or display banners promoting the *Entomologist's Record*, the Bug Club or the AES, as appropriate, at events they are organising or attending. These materials are available from the Hon. Secretary.

SNIPPET FROM AES HISTORY: It is a little known fact that in July 1947 an Australian Branch of the Amateur Entomologists' Society was started by K. D. Fairey, a timber entomologist in New South Wales, aided by Miss E. C. Chugg of Melbourne. To start with, because members were scattered through several States, no meetings were held for some time. From 1950 to 1952 meetings were held in Sydney, and the first President was L. H. Mosse-Robinson. Two mimeographed volumes of the *AES - AB Bulletin* were produced, as well as three parts of a volume of *The Australasian Entomologist*. In 1952 the organization changed its name to the Entomological Society of New South Wales, with L.H. Mosse-Robinson as first President.

FORTHCOMING EVENTS

Details of AES and other events are listed in the Events section of the AES website www.amentsoc.org. The following are the main AES-organised events in the coming period.

Saturday 11th September:

ANNUAL AES OPEN DAY AT THE OXFORD UNIVERSITY MUSEUM OF NATURAL HISTORY

Parks Road, Oxford OX1 3PW. 11:00 – 4:00

Meet up at the Museum's entomology department (upstairs) at 11:00 am.

This event will commence with a 'bug hunt' for younger members in the nearby University Parks, employing various field methods including a vacuum sampler, followed by lunch and examination of insects in the Museum. Microscopes and other equipment will be provided.

There will also be a tour of the Hope Entomological Collections, and for younger (or young at heart) members there will be opportunities to handle live insects and tarantulas etc. This event will be led by Darren Mann. It would help with the arrangements if you could please let the AES secretary know beforehand if you plan to attend – secretary@amentsoc.org.

Saturday 2nd October

AES ANNUAL EXHIBITION & INSECT FAIR

Please note the earlier date of the AES Exhibition this year. The Exhibition is the largest of its kind in the UK and has served as a major meeting place for the entomological community since 1946. We are always grateful to those members who are able to donate equipment or livestock they no longer need to the Bug Club on the day, or who can spare an hour or so to help man the stand.

Saturday 9th October

ANNUAL EXHIBITION of the QUEKETT MICROSCOPICAL CLUB

We will have a stand at the annual exhibition of our affiliates the Quekett Microscopical Club, at the Natural History Museum in London. If anyone would like to show a microscopical exhibit at the event please do come along.

NOTE FOR YOUR DIARY: EXHIBITION DATE SATURDAY 2nd OCTOBER 2010

Vhether you're young or old, beginner
r expert, there is something for
veryone who loves bugs at the
***argest** insect extravaganza of*
ne year.
oin us at Kempton Park
Racecourse on
Saturday 2nd October.

Saturday 2nd October 2010

AES ANNUAL EXHIBITION AND TRADE FAIR

KEMPTON PARK

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- Join Clubs and Societies
- Rare and Recent Books
- Meet other enthusiasts
- Stick insects
- Tarantulas and Scorpions
- Nets, Traps and Equipment
- Netting and Cages
- Mounted Specimens
- Leading Insect Artists

Kempton Park is situated under a mile from Junction 1 of the M3. Rail services operate to Sunbury Station, half a mile from the racecourse, from London Waterloo.

For further details contact the AES at:
PO Box 8774, London SW7 5ZG
or alternatively visit the Society's Website at
www.amentsoc.org

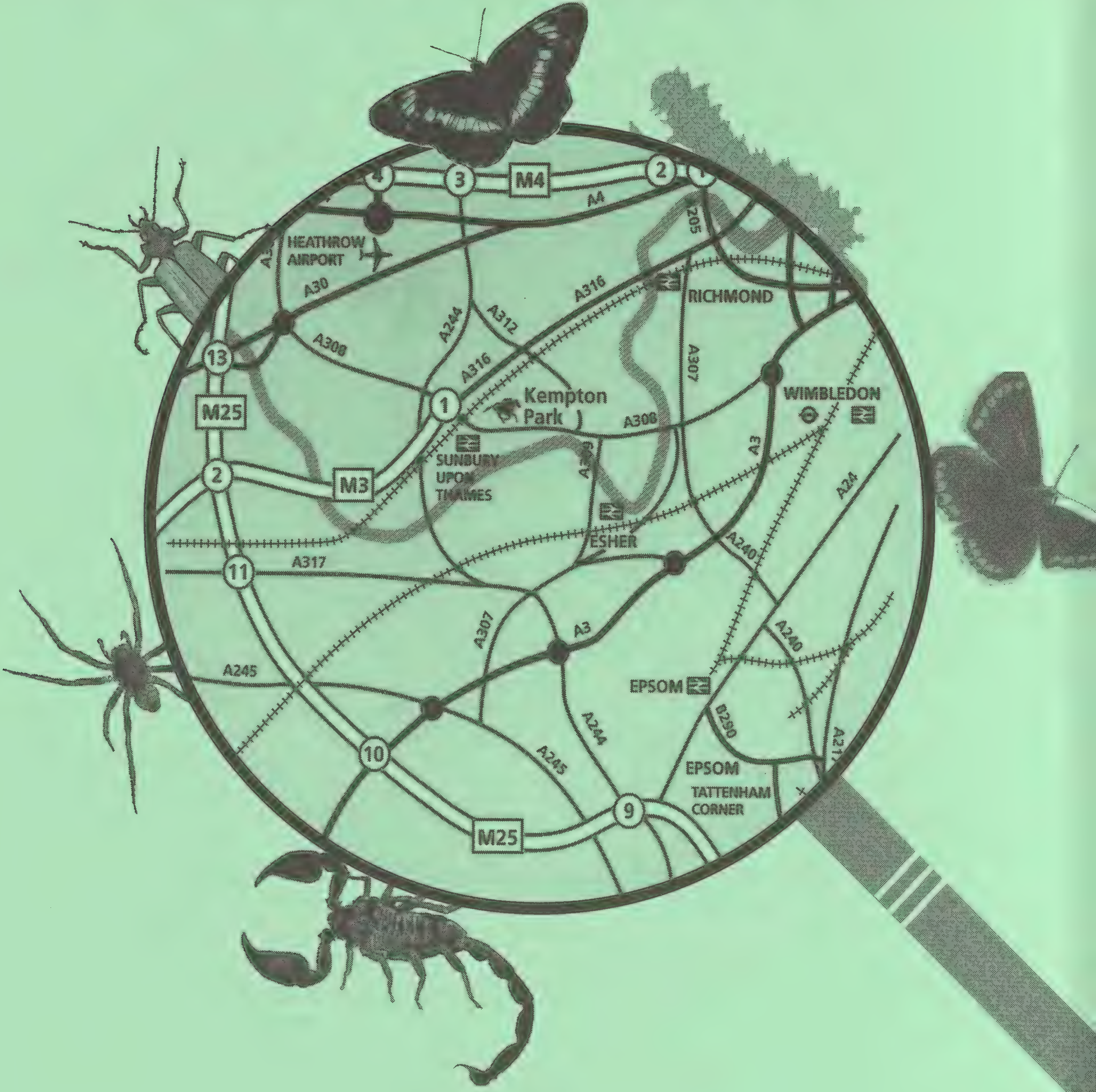
AMATEUR ENTOMOLOGISTS' SOCIETY
ANNUAL EXHIBITION AND TRADE FAIR

Saturday 2nd OCTOBER 2010

11.00am - 4.30pm

Kempton Park Racecourse
Staines Road, Sunbury, Middlesex

HOW TO GET THERE



BY CAR
From the M25. Exit at Junction 12 (M3) towards Sunbury.
Exit the M3 at Junction 1 and take the A308 sign posted for Kempton Park.
The racecourse is situated one mile on the left hand side.

BY TRAIN
Two services an hour are operated from London Waterloo to Sunbury station by South West Trains. Journey time is approximately 40 minutes.

For more information contact London Travel Information on 020 7222 1234

Enallagma cyathigerum Charpentier	x	x
Ischnura elegans Vander Linden	x	
Libellula depressa L.	x	
Libellula quadrimaculata L.	x	x
Orthetrum cancellatum L.	x	x
Pyrrhosoma nymphula Sulzer	x	x
Sympetrum danae Sulzer		x
Sympetrum fonscolombii Selys		x
Sympetrum sanguineum Müller	x	x
Sympetrum striolatum Charpentier	x	x
ORTHOPTERA		
Chorthippus albomarginatus De Geer	x	x
Chorthippus brunneus Thunberg	x	x
Chorthippus parallelus Zetterstedt	x	x
Conocephalus discolor Thunberg	x	x
Conocephalus dorsalis Latreille	x	x
Leptophyes punctatissima Bosc	x	x
Meconema thalassinum De Geer	x	x
Metrioptera roeselii Hagenbach	x	x
Myrmeleotettix maculatus Thunberg	x	x
Omocestus viridulus L.	x	
Pholidoptera griseoaptera De Geer	x	x
Tetrix subulata L.	x	
Tetrix undulata Sowerby		x

* UK Biodiversity Action Plan species
** Red Data Book species and legally protected

Conclusion

A good base of evidence is building for the continued preservation of Waveney Forest, certainly the butterfly, dragonfly and grasshopper populations are of note from a county point of view. The list of 25 butterfly species in the forest is highly notable nationally, even though there is an absence of any true rarities. Grasshoppers of dry (Mottled Grasshopper) and wet heath (Common Green Grasshopper) have been recorded and are locally rare. The Norfolk Hawker is also present on the fringing reedbeds and marshes, this is particularly important as the dragonfly is legally protected, and likely to be seriously affected by any works to create a dock in the Staith area to remove gravel by boat along the Waveney. It must be hoped that continued local opposition to the plans, and the emerging picture of the forest's wildlife value, will help with the fight to protect the site.

Acknowledgements

Thanks are due to Andy Brazil, David Richmond and Dr Pam Taylor for their advice, comments and extra records for the Waveney Forest area. Without their assistance, this study would have been far less complete.

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Lepidoptera mines on Evergreen oak *Quercus* sp. in Huntingdonshire

On the morning of 4 November 2009 whilst walking to work, MB stopped and briefly checked the leaves of one of two evergreen oaks growing close to the footpath in the grounds of Hinchingbrooke Hospital, Huntingdon. One mine was found and collected and thought possibly to be *Ectoedemia heringella*, on the supposition that the tree was a *Quercus ilex,* but the mine did not look quite right for this or *Stigmella suberivora*, another possibility. MB showed it to AB who e-mailed photographs to BD. However, it was not possible to positively identify the mine from the photographs, although *S. suberivora* was thought to be likely. MB collected more mines which were similar to the original mine from both of these trees two days later. Later that week MB and AB met with BD and showed him the leaves and it was thought they could still be *S. suberivora.* Following collection of typical (later confirmed) *S. suberivora* material by AB and MB from Bedfordshire (VC30) the following day and comparing it to the Huntingdon material, it was then decided to post the photographs on the leaf miners Yahoo e-group. Erik van Nieukerken replied as follows 'The leaves of your Huntingdon mines to me do not look as *Quercus ilex*. It might be from a hybrid with one of the deciduous oaks, the lobes normally do not occur in *Q. ilex*. These mines actually look rather like *Stigmella basiguttella*, especially the upper one in your first picture (greenish frass throughout) and not as *S. suberivora*. The second picture could all be *S. basiguttella*. The mine starting on midrib or lateral vein is typical for *S. basiguttella*, but also the egg is normally on the upperside.'

Following this, BD visited the site and collected several more leaves. These had mines which he identified as *S. basiguttella*; the same species' mines were also found on the deciduous oaks growing nearby. Several other mines were also found and these were identified as possible *S. atricapitella*, but as the mines had been vacated it was not possible to be certain.

Following Erik's comment on the identification of the trees, BD contacted a local botanist, Lynne Farrell, who identified the trees as the hybrid Turner's Oak (*Quercus* × *turneri* Willd.), which is a hybrid between *Quercus ilex* and *Q. robur*. As far as we are aware Turner's Oak is a new food plant for *S. basiguttella*.

In addition, on 15 November 2009 BD found *S. suberivora* on a true *Quercus ilex* near Hinchingbooke House, Huntingdon; this is was the first record of this leaf-miner in Huntingdonshire (VC 31). — BARRY DICKERSON, 27 Andrew Road, Eynesbury, St Neots, Cambridgeshire PE19 2QE (E-mail: barry@eynesbury27.freeserve.co.uk), ANDY BANTHORPE and MELISSA BANTHORPE, 32 Long Close, Lower Stondon, Bedfordshire SG16 6JS (E-mail: macromoths@bnhs.org.uk).

Hazards of butterfly collecting – Killing an African skipper: (*Papilio flesus* Fabricius, 1781 = *Sarangesa aza* Evans, 1941 syn. nov.)

Since the publication of my book on West African butterflies in 2005 many friends and colleagues asked me, as indeed I asked of myself: "What next?" It was a not an immediate issue. I was contracted to do a survey of the butterflies in all national parks in Ghana for two months during late 2005, followed by an ecological impact assessment of the Bumbuna Dam in northern Sierra Leone during 2006. Furthermore, there were a number of papers that had been on hold while the book was in progress that needed to be written.

However, a strong theme in conversations with colleagues was that I should do a much overdue revision of the skipper butterflies (Hesperiidae) of Africa. They were last comprehensively dealt with by Brigadier W. H. Evans in 1937 on the basis of the material in the British Museum (Natural History). Evans then went on to write similar books on the rest of the world's skippers, the one on Europe, Asia, and Africa published in 1949 and that on the Americas in 1951. It was a monumental effort by a talented man, but the treatment was necessarily somewhat summary and incomplete, though he produced a lasting baseline for any further study of the skippers in any part of the world. Without his book, I would hardly have known where to begin.

The African Hesperiidae have had a step-motherly treatment since Evans. They were not included in Bernard D'Abrera's "Afrotropical butterflies", nor were they included in Lucien Berger's huge "Butterflies of Zaïre" – he had hoped to publish a full monograph on the African skippers, but died without even leaving a manuscript. During late 2008 and early 2009 I pondered the issue and decided to undertake an in-depth study of the African skippers. I always liked skippers, of which I have already described quite a few, often jointly with Steve Collins of the African Butterfly Research Institute (ABRI), Nairobi, the foremost proponent of the project: "I won't let you look at anything but Hesperiidae in the collection till you have done the book!", he says – only half joking. Laying the foundations for this huge project is the main reason why I have missed a number of 'Hazard' deadlines.

Currently there are about 550 named African skippers; that is a greater number than all the butterfly species in Europe. Of these, no fewer than 92 (17%) were described by Evans between 1937 and 1956; that is 32 species more than the number two, Paul Mabille, one of the early dedicated students of the family, researching between 1876 and 1891. Since Evans' days, an additional 67 (12%) were described by a number of authors, foremost amongst them Lee D. Miller with thirteen, Berger with eleven, and Jan Kielland with nine. Apart from the twenty or so species that already have me as author/co-author, a further ten are more-or-less finalized, and another twenty are probably new (some already have names treated as synonyms or subspecies).

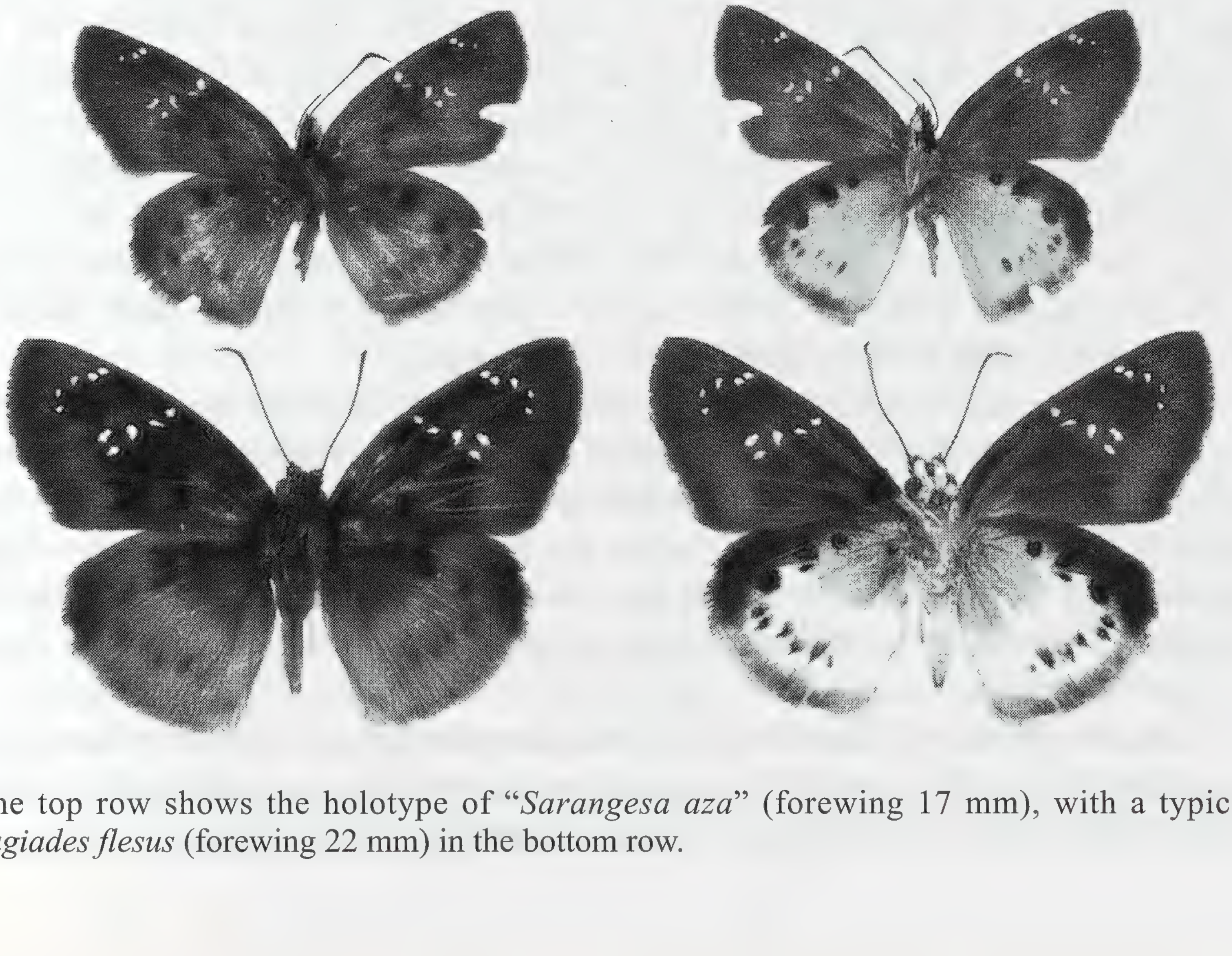
One of the pleasures in this kind of work is to see the old material in museums all over the world, collected under conditions so very different from today where you can get to nearly anywhere in Africa in a matter of days. A pleasant hazard of such rummaging is finding yet another new species or upsetting well-established apple-carts. But best of all is when some conundrum that has puzzled you for years is suddenly solved. This happened recently when I began a full study of the huge collection in the Natural History Museum (NHM), London.

In 1948, well after the publication of Evans' African Catalogue, T. H. E. [Pinkie] Jackson, who had a farm at the foot of Mount Elgon in western Kenya, undertook an expedition to the Aza Forest in the remote Amadi District of Sudan on the border with Belgian Congo (now the Democratic Republic of Congo) and the French territory of Oubangi (now the Central African Republic). This was entomological *terra incognita*. He caught a skipper that he considered a new species and sent it to Evans with a matching female from Tanzania. I can imagine the covering letter, asking Evans to describe it as a new species of the genus *Sarangesa*. They knew each other. Jackson was an outstanding field collector and knew Kenya, Tanganyika, and Uganda backwards (he was later to send his private collectors on hugely productive collecting trips to French Congo, Nigeria, and Côte d'Ivoire – collections now housed in the National Museums of Kenya). Evans clearly liked Pinkie and trusted his judgment and described it as *Sarangesa aza* in a 1951 paper, with a crude drawing of the male genitalia.

The species was never heard of again till 1996. When I wrote the book on Kenyan butterflies in 1991, I had included *Sarangesa thecla mabira* Evans, 1956 on the Kenyan list; when writing the appendix to the 1996 reprint of the book, I found that the Kenyan specimen mentioned by Evans was from Kibwezi in dry, eastern Kenya, where this species could not possibly be on both ecological and biogeographical grounds. Kibwezi, on the other hand, matched both Aza Forest and the Tanzanian habitat. I tried to find the holotype of *S. aza* in the NHM in 1996, without luck, and *S aza* became a Kenyan butterfly. And there the matter rested, though I was never comfortable with the species – known from Sudan and Tanzania, possibly in Kenya too . . . no further records. It seemed wrong.

During the recent re-housing of the NHM butterfly collection in the new Darwin Centre the curator, Blanca Huertas, kindly suggested that odd collections of Hesperiidae not incorporated in the main collection could be consolidated, and she was true to her word. Lots of interesting material surfaced and in the umpteenth consolidation box was one with the red circle indicating a type, with a label that matched the data for *S. aza*, and a new label saying "unidentified". Even before I looked at the label it was clear that I was looking at a tiny specimen of *Tagiades flesus* (Fabricius, 1781). Evans gave an unusually detailed description of this species; each and every detail perfectly matched *T. flesus*. But . . . the crude genitalia drawing could not possibly refer to the very special genitalia of *T. flesus*. After doing his drawings, Evans glued the bits and pieces on a small piece of cardboard underneath the specimen, the glob of glue often blurring many or most of the useful features. This was also the case here, but enough could be seen protruding from the glue to see that it did not belong to *T. flesus*, though I could match it with no other African species. This may well have been the reason why Evans decided that it was a distinct species. It might be possible to dissolve the glue and to rearrange the bits and pieces, but this would take hours, and serve little purpose since there can be no doubt that the *S. aza* type is a tiny *T. flesus* (you can look at the photo yourself). I actually suspect the genitalia are not from an African species.

Science is not always a precise path of majestic progress. In 1951 Evans was probably preoccupied with proofs on his Americas volume on the Hesperiidae and much correspondence on his 1949 Catalogue. Jackson's covering letter was



The top row shows the holotype of "*Sarangesa aza*" (forewing 17 mm), with a typical *Tagiades flesus* (forewing 22 mm) in the bottom row.

probably persuasive; Evans trusted Jackson's judgment; the type is truly tiny; getting genitalia preparations mixed up happens more easily than I like; and *S. aza* was born. I do hope that the Aza Forest is still doing better than its flagship butterfly . . . I have googled it to no avail!

So goodbye *Sarangesa aza* . . . on and off you have been in my thoughts for a long time. But you are hereby formally relegated to being a junior subjective synonym of *Tagiades flesus*:

Papilio flesus Fabricius, 1781. *Species Insectorum* **2**: 155 (499 pp.) Hamburgi & Kilonii. Type locality: [West Africa] "Africa aequinoctiali". Type depository: ♂ Natural History Museum (BMNH), London (Banks collection (inspected)).

= *Sarangesa aza* Evans, 1951. *Annals and Magazine of Natural History* (12) **4**: 1269 (1268-1272). Sudan: "Aza forest, Amadi District, S. Sudan". Type depository: ♂ Natural History Museum (BMNH), London (inspected) (**syn. nov.**).

— Torben B. Larsen, Jacobs alle 2, 1806 Frederiksberg, Denmark (Email: torbenlarsen@btinternet.com.

Two species of hornbeam-feeding microlepidoptera new to Berkshire

On 21 September 2008, while walking along the banks of the River Lodden at Lower Earley, I found two sets of *Parornix* larval feeding folds, with their associated mines, on some hornbeams *Carpinus betulus*. These contained one larva of *Parornix carpinella* (Frey). This had cocooned by 5 October and is now over-wintering in my garden shed.

Prompted by this discovery I searched some hornbeam trees at Jealott's Hill near Bracknell, Berkshire on 26 September and at Dinton Pastures on 27 September 2008. At both sites I found larval folds and mines of *P. carpinella* (six sets at Jealott's Hill and four sets at Dinton Pastures). Closer examination revealed that the Jealott's Hill folds concealed two larvae (one cocooned by 6 October, the other was parasitised), while those from Dinton Pastures contained one larva which had cocooned by 14 October 2008. After over-wintering in my shed adults duly emerged on 2 March 2009 (Jealott's Hill larva), 5 March 2009 (Dinton Pastures larva) and 7 March 2009 (Lower Earley larva).

Finding larvae on this food plant reminded me that I had reared *Stigmella caripnella* (Hein.) from hornbeams at Bear Wood near Wokingham, Berkshire and from Old Pond Cops in Reading. The former was found mining foliage on 25 June 2000 and hatched on 12 July 2000, while the latter was found 28 September 1998 and hatched on 8 April 1999, having been over-wintered in the garden. I searched both these sites for *P. carpinella* during the first week of October 2008, but failed to find any evidence of it.

According to Martin Harvey, the Microlepidoptera Recorder for Berkshire, both *P. carpinella* and *S. carpinella* represent new records for vice-county 22. — Ian Sims, 2 The Delph, Lower Earley, Reading, Berkshire RG6 3AN.

A Record of *Sciota hostilis* (Stephens) (Lep.: Pyralidae) from Kent and some notes on its occurrence in the county

Sciota hostilis is classified as a Nationally Endangered (British Red Data Book category 1) species, and although there is good evidence that it is also an immigrant into the British Isles it has only been recorded recently as a breeding species in Warwickshire, where larvae have been found feeding on Aspen *Populus tremula.*

Burnt Oak Wood, south of Ashford in East Kent (VC 15) is part of the Orlestone 'Hamstreet' complex; it still remains privately owned although managed by the Kent Wildlife Trust (KWT) as a nature reserve. It was clear-felled during the second word war, but has escaped the coniferisation and other depredations of parts of Orlestone administered by the Forestry Commission. Currently, it consists of a large number of oak standards together with a particularly species-rich diversity of other broad-leaved trees amongst which aspen figures predominantly, both as mature trees and suckers. On 22 June 2009, Alan Cooper, the KWT honorary warden for Burnt Oak Wood and I set up two 125-watt mv lights about 200 metres apart to record Lepidoptera in the wood. It was a good evening for moths and we attracted over 100 species between the two lights with *Pseudosciaphila branderiana* (L.) and *Comibaena bajularia* [D. & S.] being particularly common. *Stauropus fagi* (L.) was also present in good numbers. Shortly before we packed up for the night I retained a very worn male phycitid for identification. At first I thought it might be *Phycita roborella* [D. &S.], which is common in this locality in July; however, it lacked the characteristic 'knot horns' of that species and sat with its wings less rolled up and I considered that it might be *Sciota hostilis*. The specimen was so badly worn I could not confirm its identity by external characteristics alone, so consequently I prepared a genitalia slide. Comparison of this with the figure in Palm (1986. *Nordeuropas Pyralider*) confirmed that it was *Sciota hostilis*. The (male) genitalia are very similar to those of *Sciota adelphella* (F. von R.) of which I also have a slide, however, there are several points of distinction, particularly in the cornuti on the aedeagus.

Other Kent records for *S. hostilis* were obtained from Ian Ferguson, the Kent moth recorder, who supplied all the records of this species on the Kent Lepidoptera Database and Bernard Skinner, who sent me the records from his personal database, many of which have been confirmed by reference to voucher specimens. Of the 34 or so individual records of *Sciota hostilis* in these two lists 26 are from the Orlestone/Hamstreet complex. The earliest record is from 1922 (W. G. Sheldon). Subsequently, it was noted regularly by such eminent entomologists as A. J. L. Bowes, Michael Chalmers-Hunt, Richard Fairclough, H. C. Huggins, J. L. Messenger, R. F. Bretherton, Percy Cue, D. W. Ffennel, E. C. Pelham-Clinton, David Agassiz and Ted Wild, whose 1971 record was the last until 6 June 2000, when it was recorded by S. P. Clancy from Lord's (Faggs) Wood (S. P. Clancy: *Atropos* **31**: 44; *Br. J. ent. nat. Hist.* **14**: 145; 2002, *Kent Moth*

Report for 2000. Butterfly Conservation). An even more recent record is from Birchett Wood, Orlestone on 23 June 2003 (A. G. J. Butcher, personal communication). Only one of these records relates to the discovery and rearing of larvae and that is the 1950 record by H. C. Huggins who reared two individuals. Mr Huggins, who wrote extensively for this journal in the 1950s and 60s on the microlepidoptera also records taking a worn female 'at Ham Street in June', from which W. S. Giles reared half a dozen moths (*Ent. Rec.* **64**: 177). He also considered this species to be under-recorded and thought it could 'probably to be found in every aspen wood of size in mid and East Kent, and in several places in South Essex' (*Ent. Rec.* **64**: 211-213). One other record in the area is from Westwell Downs (1 July 1957, George Youden collection). Westwell Downs, north-west of Ashford and about eight miles from Orlestone is a wooded area on the southern escarpment of the North Downs. A specimen taken by D. G. Marsh in 1957 in Blean Wood Nature Reserve, now in Bernard Skinner's collection and a record from Church Wood, part of the Blean complex near Canterbury in 1963, also by D. G. Marsh (Kent Lepidoptera Database) suggests the species might also be found in this extensive area of woodland. Of the remainder, four are from Dungeness, which may indicate primary migrants; however, one of these recorded on 22 June 1957 by Stan Wakely (*Ent. Rec.* **70**: 92-94) is described as 'a striking pink form', so was almost certainly referable to *S. adelphella* and this has been confirmed by reference to the specimen currently in the Cambridge University Museum (B. Skinner, personal communication). There is one other coastal record in the KLD: from Pegwell Bay, Thanet 10 July 2004. The record in the Kent Lepidoptera Database from Stodmarsh National Nature Reserve, an area of extensive reed marshland, on 21 July 1984 is more likely to be *S. adelphella* on the basis of both date and locality although I have been unable to confirm this. Although these two species are quite distinct, they were confused in Britain prior to 1988 because Edward Meyrick in his 1895 *Handbook of British Lepidoptera* had stated that *Salebria* [*Sciota*] *adelphella* had only been regarded as British through confusion with *Nephopteryx* [*Sciota*] *hostilis* (*Ent. Gaz.* **39**: 271-274; *Ent. Rec.* **101**: 173). Consequently, some earlier records of *S. hostilis* may actually refer to *S. adelphella*.

This present record, together with the ones for 2000 and 2003 are indications that this species is still resident in the Orlestone Forest complex and probably still breeding there. It is a dull and obscure insect and could easily be overlooked. Although it would be good to confirm Mr Huggins' assertion that it might be widespread in the Kentish aspen woods it is likely to be much more local now, though probably less restricted than is generally thought.

The author and AC would like to thank the KWT for permission to record Lepidoptera from the reserve, Alan Ferguson for records from the Kent Lepidoptera Database and Bernard Skinner for sending me his records.— P. J. JEWESS, Boyce's Cottage, Newington, Sittingbourne, Kent ME9 7JF.

The winter generation of *Chromatomyia aprilina* (Goureau 1851, Dip.: Agromyzidae): more established than thought

In July 2009 Keith Palmer summarised the then current state of knowledge about the winter generation of the leaf mining dipteran *Chromatomyia aprilina*. (Winter mines of *Chromatomyia aprilina* (Goureau 1851, Dip.: Agromyzidae): first UK records. *Ent. Rec.*. **121**: 164-165). In essence, this was seen as a new phenomenon in Britain based on year 2009 records from Kent and Gloucestershire and thus echoed similarly novel reports from the Netherlands (see *http://www.bladmineerders.nl/minersf/dipteramin/chromatomyia/aprilina/aprilina.htm*). However, when looking back at some digital photographs taken on 10 April 2005, I came across a picture (Plate 19) of a mined honeysuckle leaf from near Beetham, Cumbria (VC 69). At the time this was eclipsed by other finds on the day, but now on returning to the image the distinctive pattern of long stripes of black frass switching from one side of the mine to the other and the complex branched corridor morphology of the mine identify *C. aprilina* as the species involved. This record extends the geographical spread of winter generation and suggests that it is a little more established historically than initially thought.— ROBERT HOMAN, The Apiary, Swindon Lane, Cheltenham, Gloucestershire GL50 4PD.

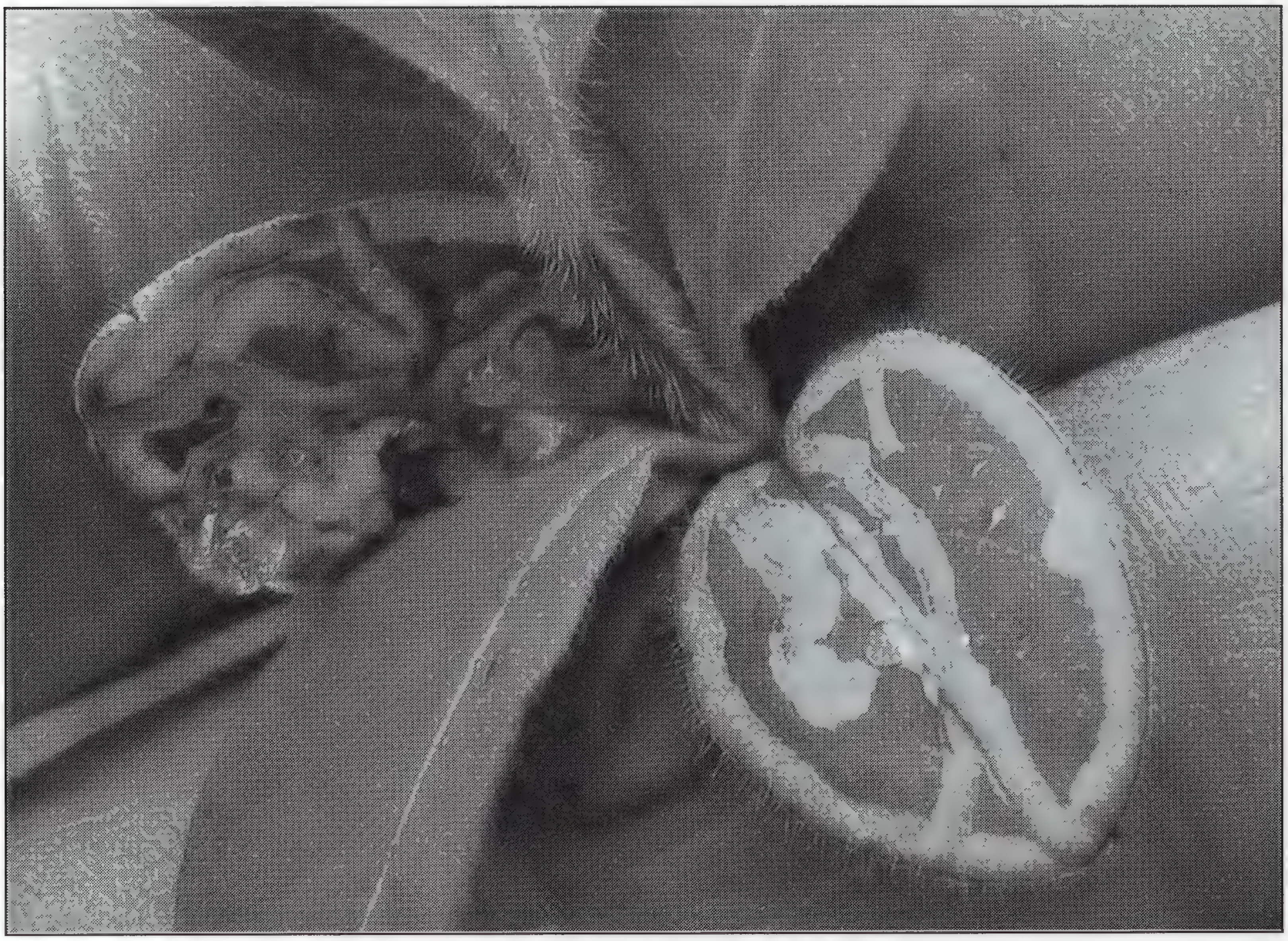


Plate 19. Larval mine of *Chromatomyia aprilina* on a leaf of *Lonicera* sp. Beetham, Cumbria, 10.iv.2005. R. Homan

Notable British barkfly (Psocoptera) observations in 2008 and 2009

What constitutes a notable barkfly observation? All of my previous articles have focused on the distribution of rare species, but there is another category of notable observation. Little is known about the life histories and habitat requirements of many species and any observations that extend this knowledge are of note. Consequently this article is divided into two sections: 1) distribution observations and 2) behavioural observations.

Distribution observations

Embidopsocus enderleini **(Ribaga) (Liposcelididae)**
On 11.v.2009 Michael Talbot loaded a photograph of a Liposcelid onto the barkfly group section of the flickr website at *www.flickr.com/groups/barkflies*. This specimen was found under the bark of a sycamore at Boultham Park, Lincoln. Following a request by RS the site was revisited by Michael to collect a specimen for identification. On 29.v.2009 he photographed and collected a similar looking adult female at the same site (at O. S. grid reference SK 963688). The specimen was sent to Charles Lienhard who identified it as *E. enderleini.* Few records of this species are known but, in southern England at least, this may be the result of under-recording.

Liposcelis decolor **(Pearman) (Liposcelididae)**
One female specimen was collected by RS under the bark of a plane tree at Aldwych, London (TQ 306808) on 27.vii.2009 (determined by C. Lienhard). This species had been previously recorded on a plane near the Victoria & Albert Museum (*Ent. Rec.* **120**: 19-20), a location 4.5 kms away from Aldwych. These records suggest that *L. decolor* is likely to be widespread on plane trees in London.

Pseudopsocus rostocki **Kolbe (Elipsocidae)**
While checking for invertebrates on seasoned oak logs destined for his wood burner David Jones (Aldershot) found one female *P. rostocki.* He followed the activity of the specimen on the log from 8 to 10.xi.2008 taking photographs including ones showing it feeding on the brown foliose lichen *Melanelia subaurifera* (determined from a photograph by Brian Coppins). The original location of the oak tree is not known but was within five miles of Farnborough. On 18.ix.2009 DJ checked another batch of oak *Quercus robur* logs (fresh timber) and found five *P. rostocki* specimens on two of them. On this occasion the location of the felled tree was known – it had been situated in a garden in Mytchett, near Aldershot (SU 889550).

Propsocus pulchripennis **(Perkins) (Elipsocidae)**
On 23.vii.2009 Jonty Denton found one female at the base of plants growing on the edge of a saltmarsh at Dell Quay, West Sussex (SU 836026). This record was

previously published in *Br. J. Ent. Nat. Hist.* **22**: 187 (2009). Marcus Oldfield has found a second site in Sussex for this species. He recorded one specimen from Sea Wormwood on the upper, drier banks of the River Cuckmere, Cuckmere Haven, East Sussex (TV 512998) on 23.viii.2009.

***Blaste quadrimaculata* (Latreille) (Psocidae)**

One female was recorded by RS on the trunk of an oak standard in the centre of Stirling (NS 795933) on 9.vii.2008. Among the specimens of *Hyalopsocus morio* found on 23.vi.2009 in Lechlade (see behavioural observations, below) David Scott-Langley also recorded one specimen of *B. quadrimaculata.* From 23 to 25.vi.2009 Jason Green observed and photographed three specimens of *B. quadrimaculata* in his garden in Eltham, London (TQ 4275). Specimens were found on a garden fence, on a disused, painted shelfback constructed of 'medium density fibreboard (MDF) and the third was rescued from a small body of water.

***Hyalopsocus morio* (Latreille) (Psocidae)**

On 23.vi.2009 David Scott-Langley made the remarkable discovery of approximately 40 specimens of this shiny black species (Plate 20) while removing Virginia creeper from the wall of a house in Lechlade, Gloucestershire (SU 214995). This is the first record of *H. morio* in Britain since 1867. Further details of this exciting find will shortly be published (Scott-Langley, D. 2010. *Hyalopsocus morio* (Psocoptera: Psocidae) rediscovered in Britain. *British Journal of Entomology and Natural History* in press).

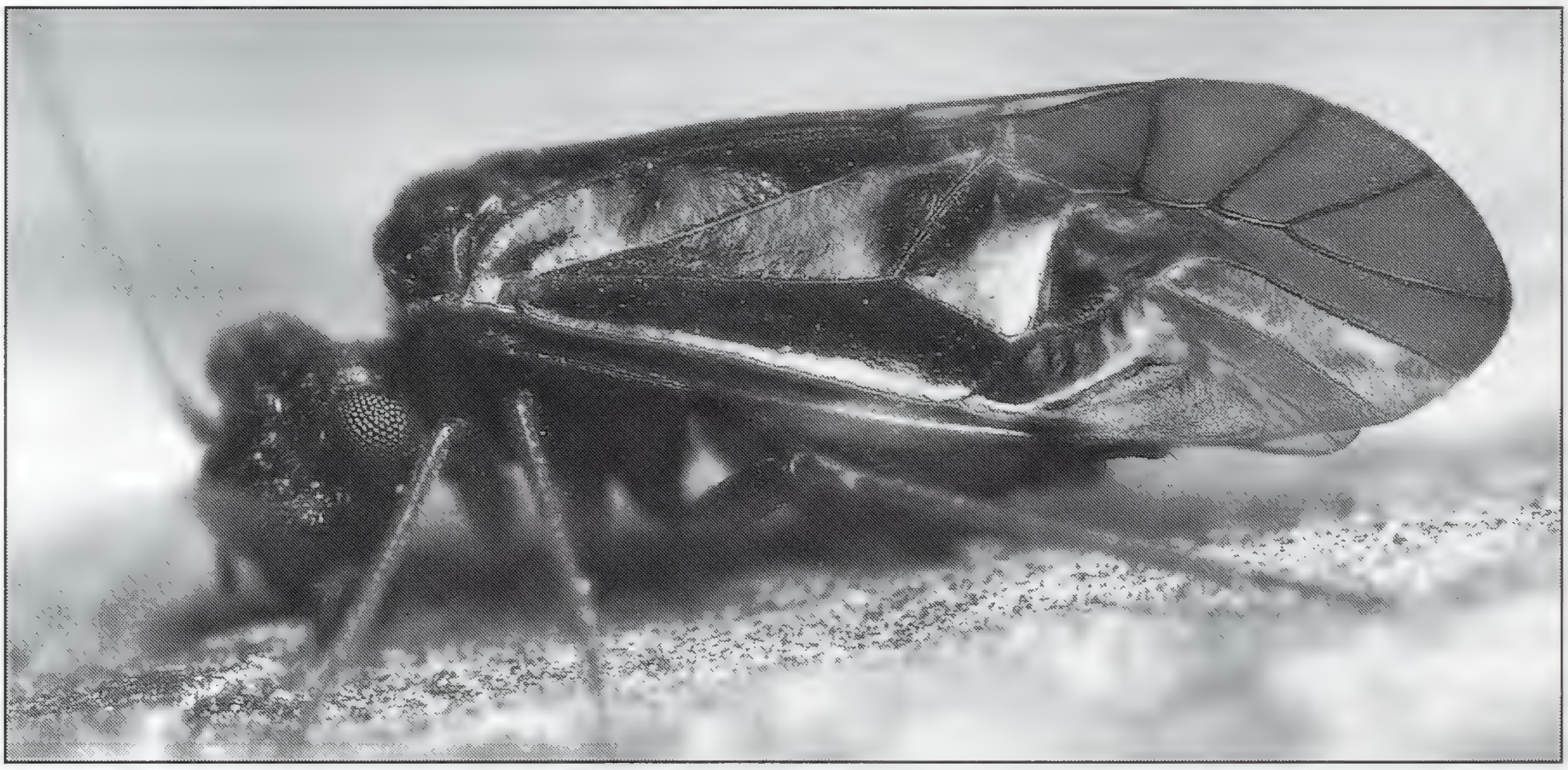


Plate 20. *Hyalopsocus morio* (Latreille) (Psocidae) Photograph © Brian Valentine

Behavioural observations

***Peripsocus milleri* (Tillyard) (Peripsocidae)**

While searching for barkflies beneath the bark of an avenue of London plane trees in the Lincoln area Michael Talbot noticed a possible habitat preference for *P. milleri.* He found that they appear to favour the exposed south-facing side of the trunk, but only if the tree catches a full day's sunshine. If this tendency holds true in other parts of the country this provides a useful guide to finding specimens.

***Reuterella helvimacula* (Enderlein) (Elipsocidae)**

In Britain this species has almost exclusively been recorded associated with trees and particularly deciduous tree trunks. An interesting additional habitat for it was found by lichenologist Brian Coppins on 11.ix.2009 during a survey of Culbin Forest, Moray (NJ 0264). The habitat in the area visited consisted of an open woodland of stunted pines with a well-developed lichen carpet ground layer (the main constituent was the nationally vulnerable lichen *Cladonia uncialis uncialis*). A female specimen of *R. helvimacula* was found on a specimen of this lichen at least one metre away from the nearest pine.

***Pseudopsocus rostocki* Kolbe (Elipsocidae)**

After discovering specimens of this rare species on cut logs (see distribution observations above) David Jones was keen to find out about the day-to-day life of *P. rostocki.* To achieve this he set up a CCTV camera to monitor the activity of one of the specimens on its log. The specimen was continuously monitored for 44 days from12 October to 25 November 2009, before it disappeared and the fascinatingly detailed findings are contained in DJ's online diary (see the Barkfly Notes section at *http://www.mybitoftheplanet.com/*).

I would like to thank Brian Coppins, Jonty Denton, Jason Green, David Jones, Marcus Oldfield, David Scott-Langley and Michael Talbot for informing me of their observations and to Charles Lienhard for identifying critical psocid species and to Brian Coppins for identifying the lichen associated with *P. rostocki.* — R. (BOB) E. SAVILLE, 20 Downfield Place, Edinburgh EH11 2EL (Email: bob.saville@ blueyonder.co.uk).

Calybites phasianipennella (Hb.) (Lep.: Gracillaridae) larvae in Berkshire

I have searched for the characteristic larval feeding 'cones' of *Calybites phasianipennella* (Hb.) at suitable sites in Berkshire for several years now, with no success until the autumn of 2008. On 27 September 2008, while walking the edge of a freshly harvested corn field to the north of Bear Wood near Wokingham, Berkshire I chanced upon some large plants of redshank *Polygonum persicaria* with their characteristic spikes of pale pink flowers and dark green leaves with dark purplish central blotches. On examining these plants I noticed some inflated phyllonorictid-like blister mines in the upper surface of several leaves. The lower surfaces of these mines were distinctly brown and creased, and closer examination of the affected plants revealed some leaves near the mines from which longitudinal strips had been cut. The underside of these leaves revealed that the missing strips had been coiled up to form rough cones, and secured with silk to the lower leaf surface. There was no doubt, these were the larval workings of *C. phasianipennella*. A search of the plants revealed a strong colony, with around 20 cones being located in a quarter of an hour. A small sample was taken, from which moths emerged on 9 October 2008.

A few days later, on 1 October, I discovered a similar site with redshank growing at the edge of a freshly harvested grain field at Jealott's Hill, Berkshire. Searching these plants revealed more cones of *C. phasianipennella*, from which a moth emerged two days later.

This moth is not common in Berkshire. Brian Baker (*Butterflies and Moths of Berkshire*, 1994) cites individuals recorded from Cothill in 1922 and 1924. Further examples were recorded from Ascot in 1968 and adults were reared from larvae found commonly at Silwood Park on Common Sorrel *Rumex acetosa* in 1979. The last recorded examples in Baker are from Maidenhead in 1989, but since then this species has not been seen in Berkshire (Martin Harvey, County Lepidoptera Recorder, pers. com.). Therefore, these records from Bear Wood and Jealott's Hill are significant. — Ian Sims, 2 The Delph, Lower Earley, Reading, Berkshire RG6 3AN.

***Pammene fasciana* (L.) [*juliana* (Steph.] (Lep.: Tortricidae): a review of the historical and current status in Scotland**

On the night of 24 June 2009, Paul Bryant, Lee Gregory and Neil Sherman accompanied me on a survey for the Pine-tree Lappet *Dendrolimus pini* (L.) (Lasiocampidae) in the Kiltarlity area of East Inverness-shire with Nairn (VC 96), organised by Tom Prescott on behalf of Butterfly Conservation. Visiting moth trappers were divided up into groups and then selected the area in which they would like to trap. My group chose to trap in the private Ruttle Wood, (O. S. grid reference NH 476420). Four moth traps were deployed at dusk in warm and humid conditions: three Skinner traps with 125W M.V. lamps and a single Johnson Ranger trap with a 15W actinic tube. Pheromone lures were also utilised on two of the traps. The habitat was mainly Scots Pine *Pinus sylvestris* with a mixture of other trees, including Oak *Quercus sp.* – one of the food plants of *P. fasciana*.

It was an excellent, albeit very short, northern night for moth trapping with nine specimens of the target species divided amongst all the traps. Many other interesting species were noted for us southerners, including Satin Lutestring *Tetheella fluctuosa* (Hb.) (Thyatiridae), Smoky Wave *Scopula ternata* (Schrank) and Welsh Wave *Venusia cambrica* (Curtis) (Geometridae), Dark Tussock *Dicallomera fascelina* (L.) (Lymantridae) as well as Beautiful Brocade *Lacanobia contigua* (D. & S.) and The Saxon *Hyppa rectilinea* (Esper) (Noctuidae). A comprehensive species list was compiled on site and then forwarded on to the VC 96 recorder, Pete Moore, once I had returned to Suffolk. I was later informed by Pete that my record of *Pammene fasciana* had been rightly queried by Mark Young as there were very few previous Scottish records.

N. Sherman and I, very familiar with *P. fasciana,* regularly catch the moth in Suffolk, so were confident with our identification. It later turned out that the specimen of *P. fasciana* had been taken away from Ruttle Wood for photography by L. Gregory. With images now circulated, we had undoubted evidence that *P. fasciana* was recorded that night. Subsequently, just two nights after our record, Steve Whitehouse and John Taylor trapped a further specimen of *P. fasciana* at Long Wood, near Kiltarlity. It would, therefore, seem most probable that *P. fasciana* is resident in the Kiltarlity area of Scotland. I would urge recorders seeking *pini* in future years to keep an eye out for the species and submit all records to the relevant recorder. All the known Scottish records to date are detailed below:

West Perthshire, VC 87: grid ref. NN 50, 'Aberfoyle 17.vii [19]68, leg. D. L.Coates.' (General coll. in National Museums of Scotland);

Stirlingshire, VC 86: grid ref. NS 39, 'Rowardennan (**86**) 21.vi [19]79 I. C. Christie.' (I. C. Christie coll., in National Museums of Scotland);

South Aberdeenshire, VC 92: grid ref. NO 39: 'Craigendarroch Wood, Ballater (**92**) 24.vi.1984 E. C. Pelham-Clinton. E. C. Pelham-Clinton coll. (NMS.); (Pelham-Clinton, E. C., Exhibit – Annual Exhibition 1984. *Proc. & Trans. BENHS* **18** (1): 18 and Agassiz, D. J. L. (1985) Microlepidoptera – a review of the year 1984. *Ent. Rec.* **97**: 8 refer);

Dunbartonshire, VC 99: grid ref. NS 56, 'Dawsholm, Glasgow (**99**) 4 & 31.vii 1985 R.Knill-Jones' (Christie, I. C., 1986. Lepidoptera in the West of Scotland 1985. *Glasgow Naturalist* **21** (2): 150);

East Inverness-shire with Nairn, VC 96: grid ref. NH 476420, Ruttle Wood, Kiltarlity, 24.vi 2009 M. J. Deans, P. Bryant, L. Gregory & N. Sherman (present record); grid ref. NH 532452, Long Wood, Kiltarlity, 26.vi 2009, S. Whitehouse & J. Taylor, here reported.

There is also an old unconfirmed record as follows:

Berwickshire, VC 61: grid ref. NT 95, Lamberton, 8.vii 1888, as *Carpocapsa Juliana*, G. Bolam (Bolam, G., 1932. The Lepidoptera of Northumberland and the Eastern Borders. *History of the Berwickshire Naturalists' Club* **27**: 137).

My thanks are due to David Barbour and Tom Prescott for facilitating the *Dendrolimus pini* survey. I am most grateful to Keith Bland, Pete Moore and Mark Young for assisting with historical records of *P. fasciana* in Scotland. Finally thanks are due to Roger Kiddie for discovering *pini* in the Kiltarlity area in the first place and the owner of the private Ruttle Wood for allowing access. — Matthew J. Deans, 49C Oak Hill, Hollesley, Woodbridge, Suffolk IP12 3JY.

CONTRIBUTION TO THE BULGARIAN MACROLEPIDOPTERA FAUNA (LEPIDOPTERA: GEOMETRIDAE, NOCTUIDAE)

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Abstract

One genus, five species and one subspecies are reported for first time in the literature for Bulgaria with firm data. *Acontia candefacta* (Hb.) is also new for the Balkan Peninsula. *Idaea spissilimbaria* (Mabille) is confirmed for Bulgaria.

Keywords: Zoogeographical data, Geometridae, Noctuidae, Bulgaria

Geometridae

***Archiearis puella puella* (Esper, 1787)**

Northern Black Sea Coast, Varna, 29.ii.1937, N. Karnozhitzki leg. (Plate 21, Fig. 1), three males in coll. National Museum of Natural History (Sofia). In Bulgaria previously only ssp. *mediterranea* Ganev, 1984 was reported, from the SW Bulgaria (type locality: Kozhouh [Rupite] near Struma River, Petrich (Ganev, 1984). At present *Archiearis puella mediterranea* Ganev has very few other localities not far away from the type locality and it is connected with *Populus alba* (Viktor Gashtarov, pers. comm.).

***Idaea spissilimbaria* (Mabille, 1888)**

Vratchanska, Stara Planina Mountains, Milanovo Village, 900m, UTM Code: FN97 (Map. 1: 2), N43°07'06": E23°23'55", 05-12.vii.2002, S. Beshkov leg. at 160-watt mvl, one female (Plate 21, Fig. 2.). The habitat is village with gardens and meadows and mixed *Carpinus* forest on the surrounding calcarous rocks. *Idaea spissilimbaria* has very strange distribution and everywhere is very rare and local; very few specimens have been collected in the world. Stanescu & Hausmann (2002) reported it as a new species for Romania (Cibin Mountains, 20.vii.) and refered its previous localities: Algeria (terra typica), Corsica, SE France (single localiy in Hautes Alpes) and Bulgaria (Vitosha Mountains). According to Hausmann (2004: 108) only nine specimens of this species are known. For Bulgaria he mentioned Sofia and Rhodopes, following the reports of Ganev (1983) and of Dufay (1983). In fact, these localities are result of misunderstanding. Dufay, unfamiliar with the geography of Bulgaria, put Vitosha Mountains somewhere in the Rhodopes, but Vitosha is near Sofia; the correct locality seems to be Vitosha Mountains, not Sofia town. Therefore, the map for *I. spissilimbaria* in Hausmann (2004) for Bulgaria is not correct: It should have two dots only – Vitosha and this one reported here (Milanovo). The present record is mentioned for Vrachanski Balkan in Abadjiev & Beshkov (2007), but without details.

Scopula virgulata virgulata **([Denis & Schiffermüller], 1775)**

Predbalkan, Tzar Petrovo Village, Vidin Region, 216m, N43°57'46": E22°38'34" (Map 1: 1), 24.v.2009, meadow on limestone area, S. Beshkov & B. Zlatkov leg., three male specimens (Plate 21, Fig. 3). New species for Bulgaria. Known from neighbouring countries in Romania and Serbia (Frushka Gora, Novi Sad and Kladovo in Timocka Krajna (Tomic, Zecevic, Mihajlovic & Glavendekic, 2002).

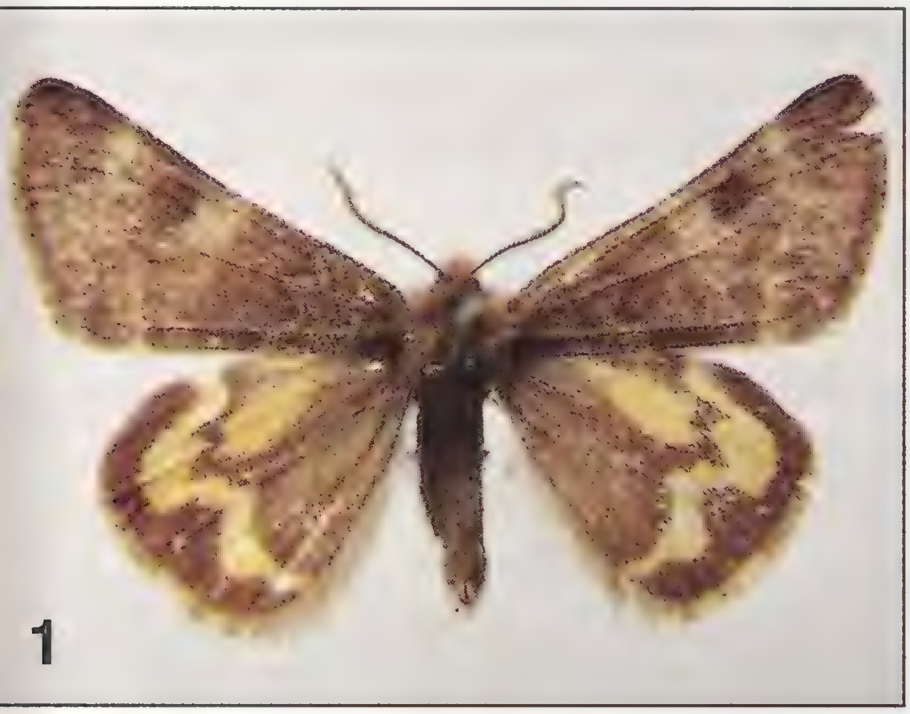
Noctuidae

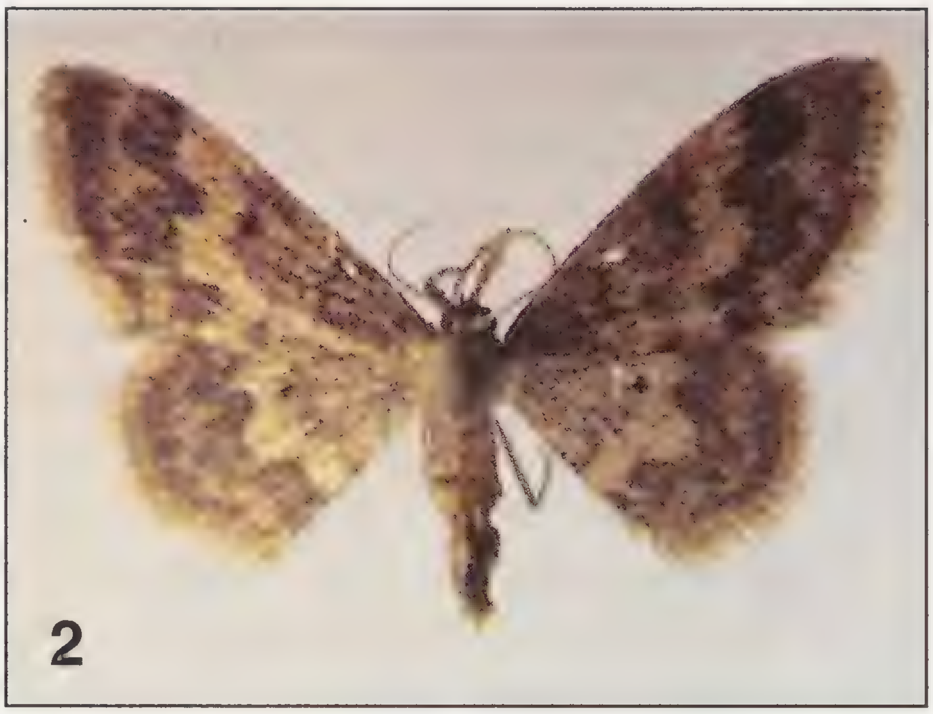
Nola harouni **(Wiltshire, 1951)**

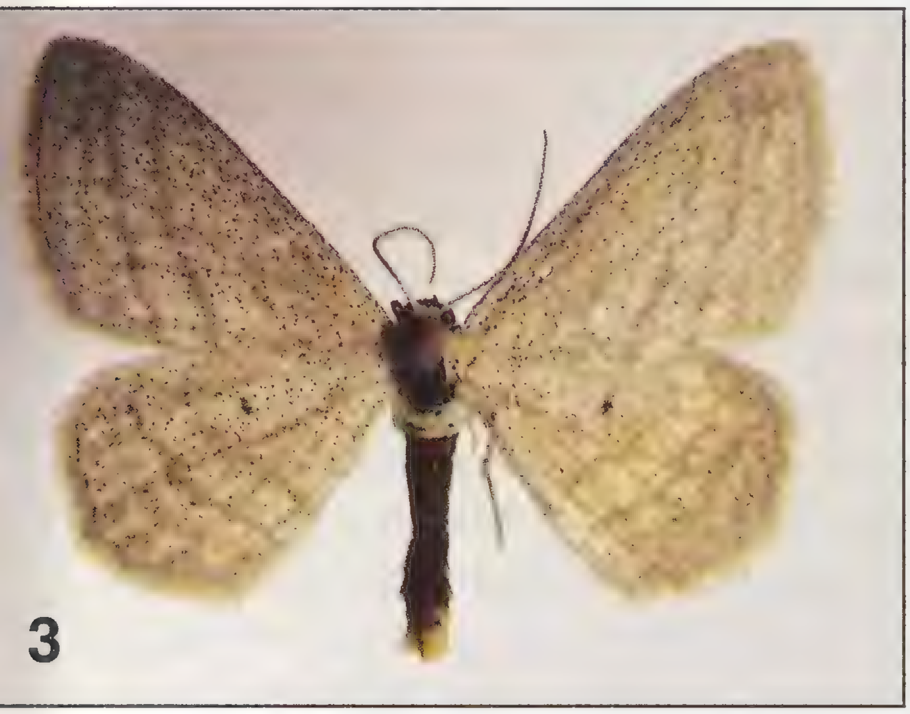
Vratchanska Stara Planina Mountains, Milanovo Village, 900m, UTM Code: FN97, (Map 1: 2); N43°07'06": E23°23'55", 03.ix.2001, S. Beshkov leg. at 160-watt mvl, one male (Plate 21, Fig. 4), Gen. prep. 1./14.ix.2001, S. Beshkov. Comparing to the illustrations in Fibiger & Karsholt (1998), there are small differences in the valvae. *Nola harouni* was reported for first time for Europe by Fibiger & Karsholt (1998) from Greece: Samos, Crete, Rhodes and Peloponnesus (Lakonia). Later, in September 2000, it was also found in the continental part of Aegean Greece – Rhodopi, Thraki and Halkidiki (S. Beshkov leg.). *Nola harouni* has subtropical Mediterranean Asiatic distribution, restricted to Asia Minor, Iraq, Iran, Jordan, Dhofar, Bahrain and Saudi Arabia. The locality in Bulgaria is the most northern known. This specimen is mentioned for Vrachanski Balkan in Abadjiev & Beshkov (2007), but without data.

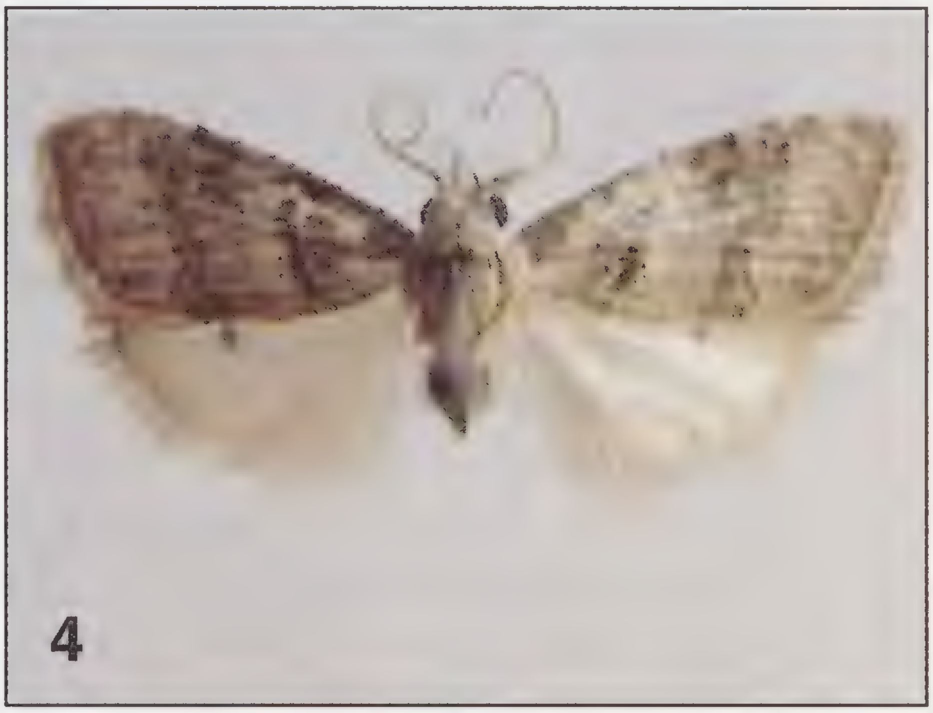
Pandesma robusta **(Walker, [1858])**

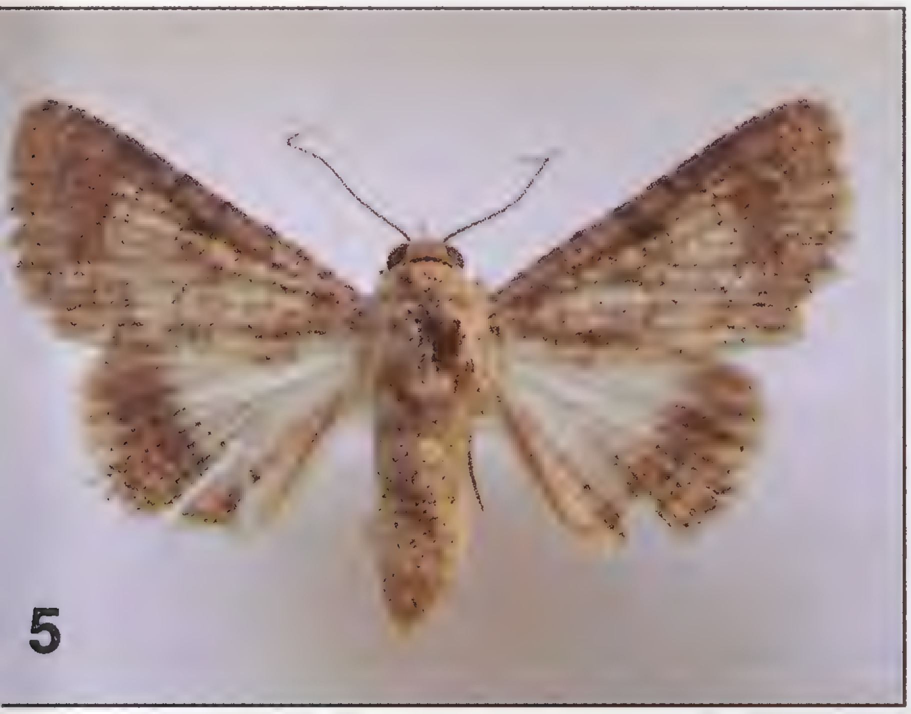
Black Sea Coast, Cape Kaliakra, SW slopes (Map 1: 4.), above the coast opposite the crossroad to Bolata Dere, 71m, (Plate 23), UTM Code: PJ10 N43°22'50.8": E28°27'04.6", 14.viii.2004, S. Beshkov leg. in 15-watt actinic light trap, one female (Plate 21, Fig. 5). This was during the first European moth nights session. The weather was extremely bad, with wind and rain, so I did not put out the big lamps. However, in order to obtain at least some data from Bulgaria from this night, I put the actinic trap on the car whilst I slept. In the morning the trap was full with common migrant species and among them there was a single female specimen of *Pandesma robusta,* which was a new genus and a new species for the Bulgarian fauna. This is also the most northern and eastern locality for this tropical species in Europe. Some of these data are presented in Rezbanyai-Reser & Kadar (2005). Lehmann & Hoppe (2007) reported *Pandesma robusta* (Walker) in number as a migration in Gafsa Province, Tunisia. They also mentioned in its range Bulgaria, but without any exact locality; they presumably followed my data from Kaliakra, used and quoted also by Rezbanyai-Reser & Kadar (2005). *Pandesma robusta* (this specimen) is mentioned for Kaliakra site in Abadjiev & Beshkov (2007), but without data. Fibiger (1986) first introduced the name *robusta* Walker for Europe and summarized all known localities in Europe:











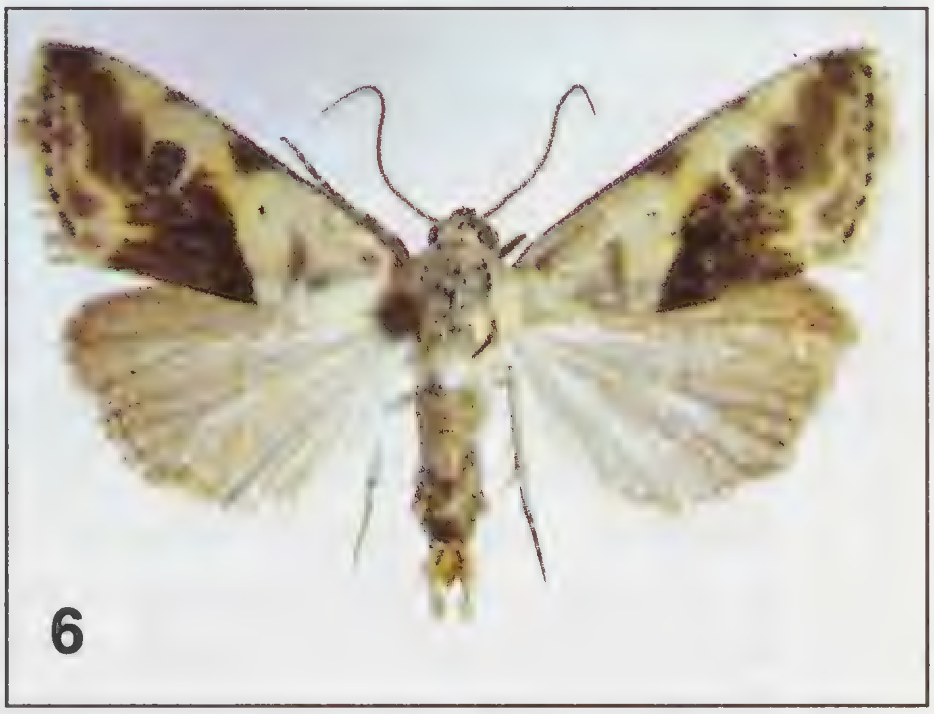


Plate 21. Figure 1. *Archiearis puella puella* (Esper, 1787), male. Northern Black Sea Coast, Varna, 29.ii.1937; **Figure 2.** *Idaea spissilimbaria* (Mabille, 1888), female. Vratchanska Stara Planina Mts, Milanovo Village, 900m, 5-12.vii.2002; **Figure 3.** *Scopula virgulata virgulata* ([Denis & Schiffermüller], 1775), male. Tzar Petrovo Village, Vidin Region, 24.v.2009; **Figure 4.** *Nola harouni* (Wiltshire, 1951), male. Vratchanska Stara Planina Mts, Milanovo Village, 900m, 3.ix.2001; **Figure 5.** *Pandesma robusta* (Walker, [1858]), female. Black Sea Coast, Cape Kaliakra, SW slopes, 14.viii.2004; **Figure 6.** *Acontia candefacta* (Hübner, [1831]), male. Danube Plain, Karaboaz near Gulyantzi, 32m, 18.v.2009.

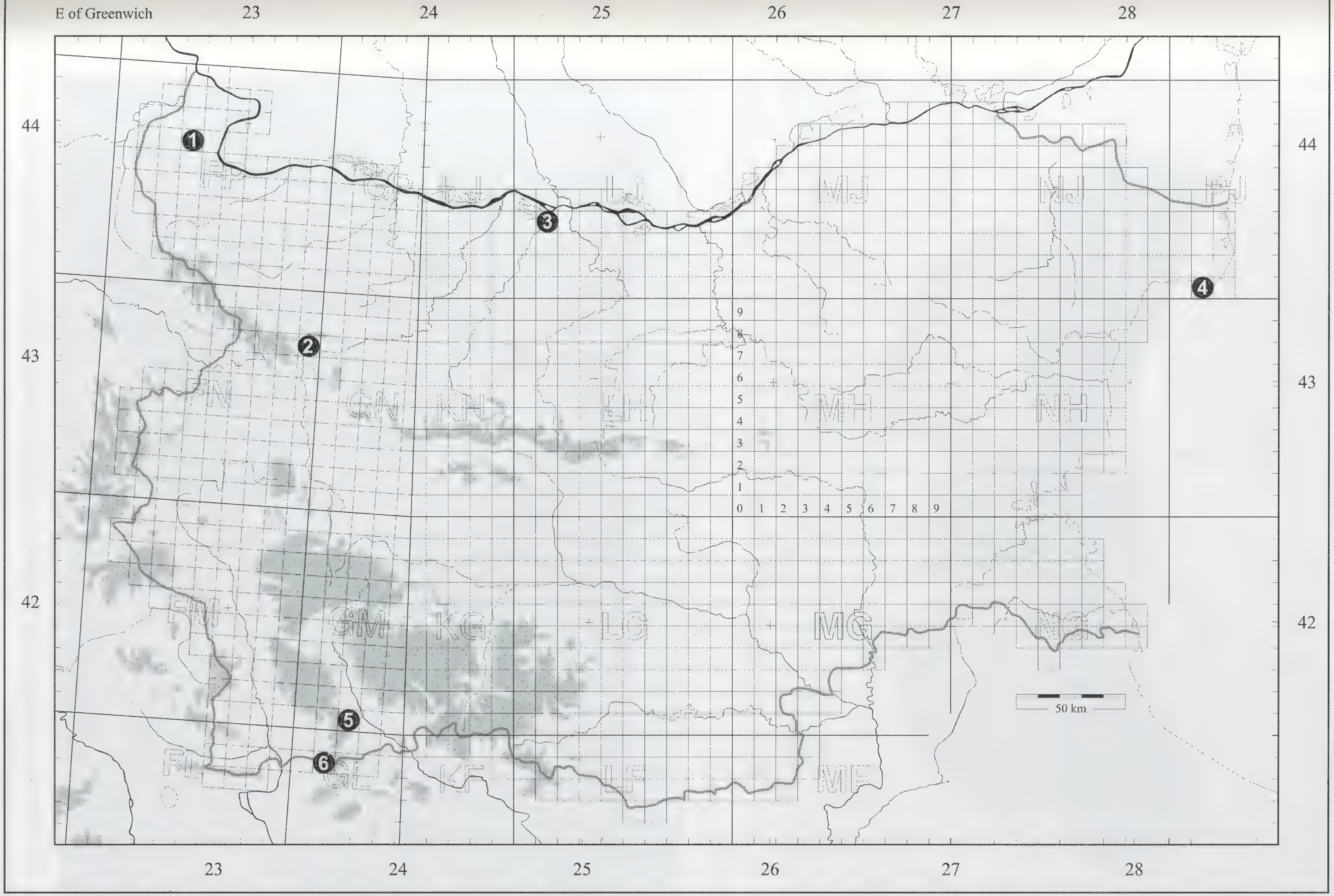
Greece (Peloponnesus, Attiki), Portugal and Spain. Bella & Russo (1999) reported it from Etna Mts, Sicily. It is known also from Friuli, Lazio, Calabria, several more localities in Sicily in Italy, from Malta and Corsica (Betraccini, Fiumi, Parenzan & Zilli, 2008).

***Acontia candefacta* (Hübner, [1831]))**

Danube Plain, Karaboaz near Gulyantzi, 32m (Map 1: 3), N43°40'40": E24°42'36", 18.v.2009, ruderal and steppe area, sandy and solty soil, S. Beshkov & V. Delov leg. One male (Plate 21, Fig. 6) at mvl and black light. New species for Bulgaria (and Balkan Peninsula). The first report for Ukraine is that of Kljuchko, Budashkin & Gerassimov (2004), who reported *A. candefacta* from several localities there: Donesk region, Lugansk region and several localities in Crimea. Lehmann (2007: 247) reported *A. candefacta* from Ukraine, Black Sea Coast [*sic*!], [Sea of Azov], Zaporoze, 3 km eastern of Berdjansk Town, 50m, 03.vii.2005, L. Lehmann leg., during the second European Moth Nights session. So far as the present author knows, for first time there (Rezbanyai-Reser & Kadar, 2007: 309) *A. candefacta* is illustrated in the literature for Europe, but the illustrated specimen however is not European. *A. candefacta* was also collected in Romania, 2009 (Szekely Levente, pers. comm.), but there is not yet any report of this in the literature. The locality in Bulgaria is the most western and southern one available. Recent records suggest that *A. candefacta* is moving westards or south-westwards, in the direction from whence it came. According to Kljuchko, Budashkin & Gerassimov (2004), Kluchko (2006) *A. candefacta* was introduced in 1967-1968 from southern Canada to the Krasnodarks and Stavropolsk areas of Southern Russia, as a biological control agent for *Ambrosia* Linnaeus and at present is component of he fauna of the steppe zone of Ukraine. It is spreading there rapidly (Fibiger & Hacker, 2005).

***Euxoa montivaga* Fibiger, 1997**

South-west Bulgaria, Alibotoush (= Slavyanka) Mts, below Livada above Goleshevo Village, 1500m, (Map 1: 6.) 15.vii.1998, mountain meadow with *Juniperus* in coniferous zone, S. Beshkov, S. Abadjiev & V. Gashtarov leg., one male and three females, Gen. prep. 18./27.i.2004, S. Beshkov, male genitalia with everted vesica in Euparal; SW Bulgaria, S Pirin Mts, below Orelyak summit, 1900m (Map 1: 5), 15.vii.2002, dry subalpine stony zone with marble rocks, *Juniperus, Fragaria*, gras vegetation, S. Beshkov, J. Nowacki & M. Bunalski leg. at 160-watt mvl with 18-watt black tube, one male and one female (Plate 22), S. Beshkov 19./27.i.2004, S. Beshkov, female genitalia in Euparal S. Beshkov & J. Nowacki. *Euxoa montivaga* is xeromontain species, at present known from Greece, Bulgaria and Turkey. *Euxoa montivaga* Fibiger is mentioned for Alibotoush (= Slavyanka) site in Abadjiev & Beshkov (2007), but without locality and collecting data. In Abadjiev & Beshkov (2007) this species is mentioned for Pirin, but in fact the true locality 'Orelyak' (same material reported here) is not in the Pirin region. The dot for Pirin on the map in Abadjiev & Beshkov (2007) is, therefore, incorrect.



Legend for Map 1.

1. Tzar Petrovo Village, Vidin Region (*Scopula virgulata*); **2.** Vratchanska Stara Planina Mts, Milanovo Village (*Idaea spissilimbaria, Nola harouni*); **3.** Karaboaz near Gulyantzi (*Acontia candefacta);* **4.** SW slopes of Cape Kaliakra (*Pandesma robusta*); **5.** S Pirin Mts, below Orelyak summit (*Euxoa montivaga*); **6.** Alibotoush (=Slavyanka) Mts, above Goleshevo Village (*Euxoa montivaga*).

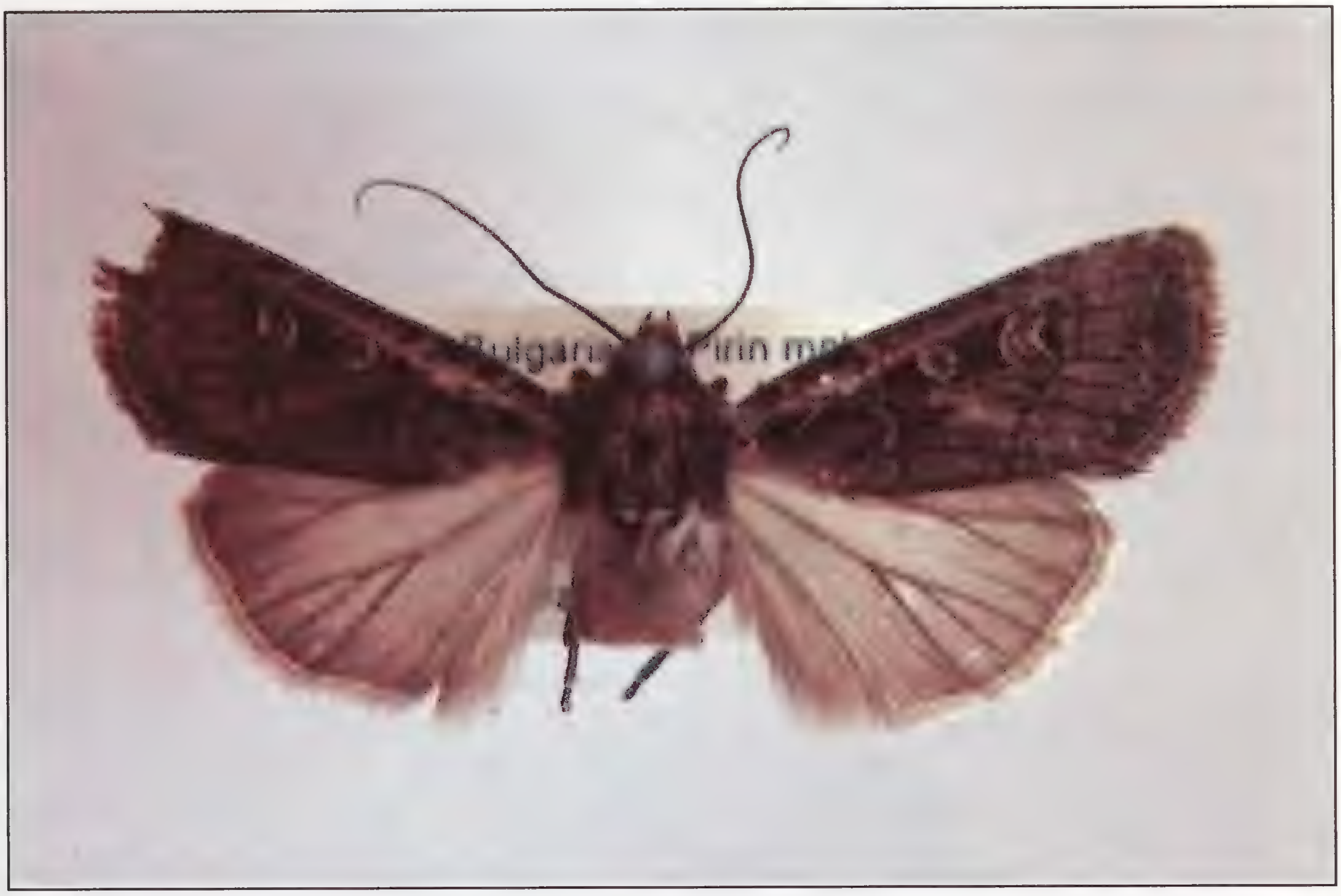


Plate 22. *Euxoa montivaga* Fibiger, 1997, female. S Pirin Mts, below Orelyak summit, 1900m 15.vii.2002.

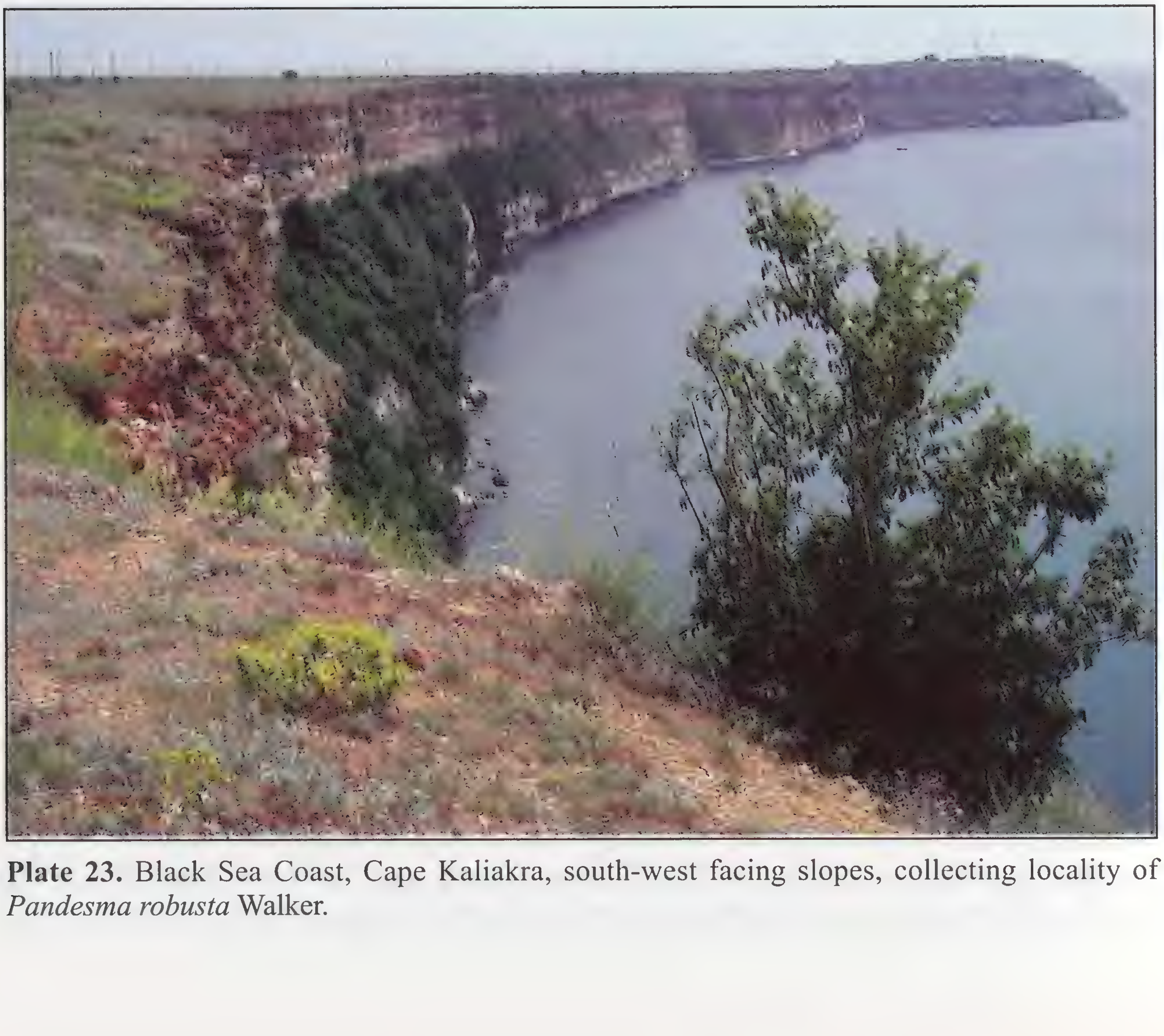


Plate 23. Black Sea Coast, Cape Kaliakra, south-west facing slopes, collecting locality of *Pandesma robusta* Walker.

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Caloptilia leucapennella (Stephens) (Lep.: Gracillariidae) at Jealott's Hill, Berkshire

During the autumn of 2009 I decided to try beating leylandii conifers *Cupressocyparis leylandii* and young yew *Taxus baccata* scrub at Jealott's Hill, near Binfield in Berkshire, for *Ypsolopha ustella* (Yponomeutidae). Numerous examples of this common and very variable moth were obtained during the month of September, which was especially sunny and mild.

On 21 September, at around 13.00 hours, I beat a 'caloptilid' from *leylandii*. This moth appeared at first sight to be particularly pale, and on returning home I established that this was a pale greenish form of *Caloptilia leucapannella*. Two further red/brown examples were beaten from yew on 25 September around the same time of day. A second pale green form and a third red/brown form were beaten from leylandii on 28 September at around 12.30 hours.

Enquiries of Martin Harvey, the Lepidoptera Recorder for Berkshire, revealed that the only prior records of this species for vice county 22 are one (undated) at Streatley, noted in the *Victoria County History* of 1906, and a second taken in Windsor Great Park in 1965 by A. A. Allen. Hence, these five examples from Jealott's Hill represent significant records for this species in east Berkshire. Martin Albertini, the Lepidoptera recorder for the neighbouring vice-county of Buckinghamshire, tells me that it has not been recorded from VC 24. Hence, it can be concluded that *C. leucapannella* is a scarce species in this part of the United Kingdom.

Jealott's Hill is an interesting area, which evidence suggests is an outlier of Windsor Great Park. The area has many ancient Oak *Quercus robor* trees, many located at random in the middle of fields rather than associated with old hedgerow lines as is usual elsewhere in east Berkshire (e.g., at Lower Earley for example). This historical association with Windsor Great Park is supported by the discovery of several species of microlepidoptera at Jealott's Hill that are scarce or new to the county. Since commencing to work the Jealott's Hill area in August 2005 I have recorded three new species of microlepidoptera for VC 22: *Ectoedemia heringella* (Mariani) (*Ent. Rec.* **120**: 139), *Parornix carpinella* (Frey) (*in lit.*) and *Dystebenna stephensi* (Stt.) (*Ent. Rec.* **120**: 146). Although *E. heringii* is a recent colonist in the UK, it is so numerous at Jealott's Hill on large Holm Oaks *Quercus ilex* that its' discovery here may indicate a lack of recording in the local environs. The other two species are more interesting, in that they may represent relict populations from Windsor Great Park managing to maintain themselves on the oaks and Hornbeams *Carpinus betulus* growing at Jealott's Hill today.

Other unusual species of Lepidoptera for Berkshire recorded at Jealott's Hill since August 2005 include *Calybites phasianipennella* (Hb.) (*in lit.*) and *Metriotes lutarea* (Haworth) (*Ent. Rec.* **121**: 202). Both are present as strong breeding colonies at Jealott's Hill. The larvae of both feed on low-growing plants (Red Shank *Polygonum persicaria* and Greater Stitchwort *Stellaria holostea*, respectively) which are common denizens of woodland borders and clearings and grow abundantly in field borders and under hedgerows at Jealott's Hill.

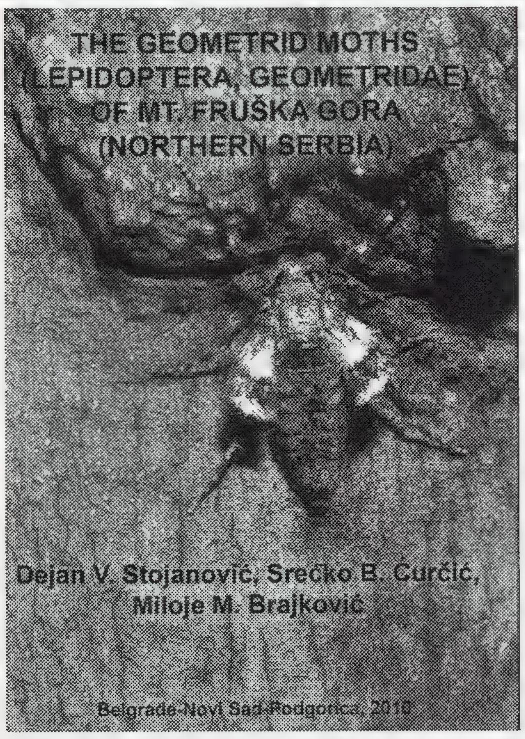
It is perhaps significant that an example of the Heart Moth *Dicycla oo* (L.) and the Merveille-de-jour *Dichonia aprilina* (L.) were recorded at MV light at Jealott's Hill in 1977 (Jon Cole, pers. comm.). Both these species are well known for their association with Windsor Great Park. It will be interesting to see if, in time, other species noted for Windsor Great Park are recorded in the Jealott's Hill area. — IAN SIMS, 2 The Delph, Lower Earley, Reading, Berkshire RG6 3AN.

Autumn migration of the Painted Lady *Vanessa cardui* (L.) (Lep.: Nymphalidae)

Richard Fox (*Ent. Rec.* **121**: 262-263) reported one to three Painted Lady butterflies apparently leaving the south coast of England from three different localities between 14 and 17 October 2009. He suggested that these provided strong evidence of a return migration of this species from Britain. In the light of this, it is perhaps worth putting on record apparent immigration of this species onto the North Kent coast earlier that autumn. On 7 August 2009, at Shellness, at the extreme eastern end of the Isle of Sheppey, small numbers (a few tens) came in off the sea from the east and north-east between 09.30 and 17.15 hours. Although there were frequently several amongst low vegetation along the shore during the day, most of those arriving continued purposefully inland. The weather was mostly cloudy, but mild with a north force 1-2 wind. Migrating Swallows *Hirundo rustica* were also coming in off the sea all day. I saw no Painted Ladies during a similar watch on 12 August and on 24 September, when I next visited the area, there was just one individual amongst the beach vegetation. While the origin of these butterflies is necessarily unknown, the fact that they were making a sea-crossing suggests they were genuine migrants which could presumably have come from further north along the English east coast or, conceivably, from the Continent. If those coming from the north-east continued on the same heading they would ultimately have reached the south coast. One might speculate that those coming from the east could subsequently have changed their heading and that all these butterflies eventually left the south coast for the Continent. In any case, these observations appear to be good evidence of autumn migration of this species in England.— PETER OLIVER, The Briar Patch, Trevereux Hill, Oxted, Surrey RH8 0TL.

BOOK REVIEW

The Geometrid Moths (Lepidoptera, Geometridae) of Mt. Fruška Gora (Northern Serbia) by **D. V. Stojanović, S. B. Ćurčić & M. M. Brajković**. 328 pp, including 207 colour figures, 126 colour photos, 131 colour photos of both male and female genitalia, 126 colour UTM maps, six colour graphs, one black-white table, a catalogue, and a check-list; smooth paper; hard cover; colour slip cover. In English. ISBN: 978-86-910965-1-9. Published 2010 by the University of Belgrade, Fruska Gora National Park, and the University of Montenegro as *Institute of Zoology Monographs* volume XIV (ISSN: 1451-3900. 2010). €70 plus postage and packaging (20% discount if you order three or more copies) – available from Asst. Prof. Dr. Srecko Ćurčić, Institute of Zoology, Faculty of Biology, University of Belgrade, Studentski Trg 16, 11000 Belgrade, Serbia (E-mail: srecko.curcic@yahoo.com).


THE GEOMETRID MOTHS
(LEPIDOPTERA, GEOMETRIDAE)
OF MT. FRUŠKA GORA
(NORTHERN SERBIA)
Dejan V. Stojanović, Srećko B. Ćurčić,
Miloje M. Brajković
Belgrade-Novi Sad-Podgorica, 2010

A common complaint from entomologists in northern England and Scotland, not to mention Ireland, is that they often feel somewhat isolated. So imagine being an entomologist in a country like Serbia, or for that matter any of the Balkan countries, where not only is your nearest entomological neighbour likely to be several hundred kilometres distant, but he or she is also likely to be one of only a mere handful of like-minded souls in the entire country! Yet is spite of this splendid isolation (or perhaps because of it?), there is a small group of dedicated chaps (and occasional chapesses) labouring away in their chosen taxonomic area. True – these people tend to be professionals, as there is no historical tradition of amateur entomology in the Balkans, unlike here in Britain, but this does not detract from the value of the research undertaken. The lack of national distribution maps for insects in these entomologically rich countries is probably a direct results of this lack of amateur input.

However, much recording work is progressing and this present volume is a welcome addition to the literature on the moths of the region. Fruška Gora Mountain is a relatively large area lying to the south of the city of Novi Sad along the southern side of the River Danube. The present work lists a total of 187 species of Geometridae (of which only 15 are *Eupithecia* species – perhaps a surprisingly low total?) from 60 localities. This represents around 50% of the currently known Serbian geometrid fauna of 370 species suggested by recent authors.

The book commences with a basic introduction to the Geometridae and to the recording area. A checklist of the 187 recorded species then precedes discussion on each. Distribution maps for 126 species for which sufficiently accurate locality data are available are presented on the UTM grid – data for remaining species is reliable, but not sufficiently localised for mapping. Half-page colour plates are presented for several species and colour images of the genitalia of most species are also presented.

The colour pictures of the moths are a bit washed out and in some cases better specimens could have been selected, but this is perhaps unfair criticism. In spite of being eminently readable, the presentation style betrays the academic background of the authors – the notion of popular books on moths has not yet reached Serbia and in any event is unlikely to be commercially viable; the target audience is likely to be more interested in the scientific data than in the pictures! At 70 Euros this is not likely to appeal to everyone, but it is certainly a useful tome for anyone planning to collect and study moths in the Balkans – something I would actively encourage since there is a veritable mountain of new discoveries out there waiting to be made. The physical mountain it is easily reached by visitors; for those interested there is unbroken motorway all the way from the Channel Ports to Novi Sad – a route I have travelled on many occasions.

Colin W. Plant

AES Publications

Amateur Entomologists' Society

British Butterflies throughout the year by Peter May
This new book from the AES describes the adults of different species of British butterflies, according to the time of year they appear on the wing. Nearly all the 60 British species are illustrated. Focussing on encouraging an interest in entomology among the young, and the young at heart, there is a helpful calendar of flight times and a useful checklist to help you keep track of your observations. **£ 5.00**
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A comprehensive guide to collecting and studying the biology and ecology of these aquatic insects. 44 pages, 10 figures and bibliography (1982) **£ 4.20**
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Breeding the British Butterflies by P.W. Cribb
A practical handbook covering all aspects of butterfly breeding, including general techniques, equipment and hints on how to breed each of the British species. 60 pages, 6 figures, 5 plates, Revised (2001) **£ 5.20**
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Practical Hints for the Field Lepidopterist by J.W. Tutt
Written at the turn of the century, this book has been reprinted because of its scarcity and value to students of Lepidoptera. It gives a complete month by month guide to which species and stages of macros and micros to look for and how to find them. Also contains a biological account of the early stages and how to keep, rear, photograph and describe them. 422 pages. Hardback. (Reprinted 1994). **£ 24.00**
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The larger water beetles of the British Isles by Peter Sutton
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BAREA ASBOLAEA (MEYRICK, 1833) (LEP.: OECOPHORIDAE *SENSU STRICTO*): AN ADVENTIVE MOTH NEW TO THE BRITISH FAUNA

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Abstract

Barea absolaea (Meyrick, 1833) (Lepidoptera: Oecophoridae) is recorded for the first time from the British Isles from Cornwall. The adult male and the male genitalia are illustrated and recognition features are presented. The moth may have been introduced with imported plants from Australia and may have adapted to other food sources to form a naturalised population that may or may not extend its range. Although large numbers of males have been attracted to light traps, no females have been recorded so far.

Keywords: *Barea absolaea*, Oecophorinae, adventive, new to Britain.

Capture and identification

Since 1999, LO and HO have been operating a moth trap at their garden in Penzance, Cornwall, recording the larger moths. During 2006, a concerted effort to list the micro-Lepidoptera coming to the lamp revealed a species that was quite unfamiliar, though clearly a member of the Oecophoridae *sensu lato* and close in overall appearance to a *Depressaria* species. The moth was shown to Frank Johns, who felt that the nearest match seemed to be *Depressaria pimpinellae* Zeller, which had only been recorded in Cornwall once before, in 1904, whilst the food plant of that species is not thought to grow locally. Frank consulted Phil Boggis, who also thought *D. pimpinellae* to be the nearest match, but adding that the match was not perfect. RoyMc Cormick suggested it could be *D. pastinacella* (Dup.). The moth remained a mystery for some while, but in 2008 large numbers were caught in the Penzance trap and small numbers were also caught at Crows an Wra, four miles to the west, by Bernard Hocking – perhaps two or three per year. Investigations were re-opened.

In March 2010, a preparation of the genitalia was made and photographed by Frank Johns. The images of the genitalia were then e-mailed to JC together with photographs of the moth. JC felt that these might represent a species new to the British Isles and showed the images to CWP who agreed that this was probably the case. CWP e-mailed images to John Langmaid and David Agassiz who both concurred that this was an oecophorid *sensu lato* apparently new to Britain. A male voucher specimen was provided to JC, who made a fresh genitalia slide then images of adults and the fresh slide were e-mailed to Peter Huemer and Ole Karlsholt who suggested a resemblance to *Barea* Walker, 1864, a genus distributed with a number of species in Australia and New Zealand. Martin Honey and Kevin Tuck at the British Museum (Natural History) were contacted and they in turn contacted Ted Edwards at the Australian National Insect Collection who confirmed the generic determination and identified the moth as being *Barea absolaea* (Meyrick, 1833).

Description of the adult moth (CWP)

The living moth resembles a *Depressaria* species in overall appearance (Plate 25). However, the absence of ocelli on the vertex and the absence of scale tufts on the upper surface of the forewings place it in subfamily Oecophorinae (now regarded as a full family, Oecophoridae *sensu stricto*) and so rules out this genus, as does the subtly different outline of the hindwing. These technical details provide a clear example of the value of actual specimens rather than photographic images in the process of identifying unfamiliar moths! The following description is intended to facilitate recognition and is based on four male examples in CWP's collection:

Forewing upper surface with ground colour pale, but heavily adorned with dark brown scales so that the overall appearance of the wings is dark brown with lighter patches. Thoracic dorsum brown, concolourous with the wings, tegulae with pale scales at their tips. Sub-basal fascia poorly defined, indicated by a patch of dark brown scales in the hind part, though obscured by pale ground colour scales in the costal area. Basal fascia indicated by a blotch of dark scales interrupted both costad and dorsad by paler scales. Remaining fasciae quite obsolete, except that there is a preponderance of pale ground colour evident in the region of the median fascia. A distinctive central, longitudinal streak containing three dark spots each with a patch of pale scales at its outer edge. Cilia grey, darker basally and at the tips. **Hindwing upper surface** uniformly shining grey, cilia paler with grey sub-basal and terminal lines. **Head** with adpressed pale brown scales, with a tuft of scales at each side of the 'collar' having darker scales at its base. Ocelli absent. Antennae reaching between $^2/_3$ and ¾ length of forewing, ventrally ciliate, entirely brown-scaled, though scales easily lost giving the impression of a pale antenna. Scape lacking a pecten (unlike *Depressaria*). Labial palpi strongly recurved, segment 1 minute and hidden under the scales so appearing continuous with segment 2. Segments 1 and 2 combined distinctly broader and slightly longer than segment 3, roughly clothed with pale fawn scales variously admixed with dark brown scales, lacking the ventral projection of scales typical of *Depressaria* species. Segment 3 smoothly scaled, entirely dark brown with a hint of a pale tip. Haustellum pale scaled. **Lower surface**: forewing shining brownish-grey, hindwings shining grey. Coxae grey with pale tips, femora grey. Tarsal segments grey with pale tips.

No female specimen is currently available.

Description of male genitalia (JC)

Distinctive (Plate 24). The apex of the valva deeply bifurcate, the dorsal process tapering apically, the ventral process much blunter at the apex. The most distinctive feature is the long and blunt tipped gnathos, in combination with the tapering and blunt tipped uncus.

No female specimen is currently available.

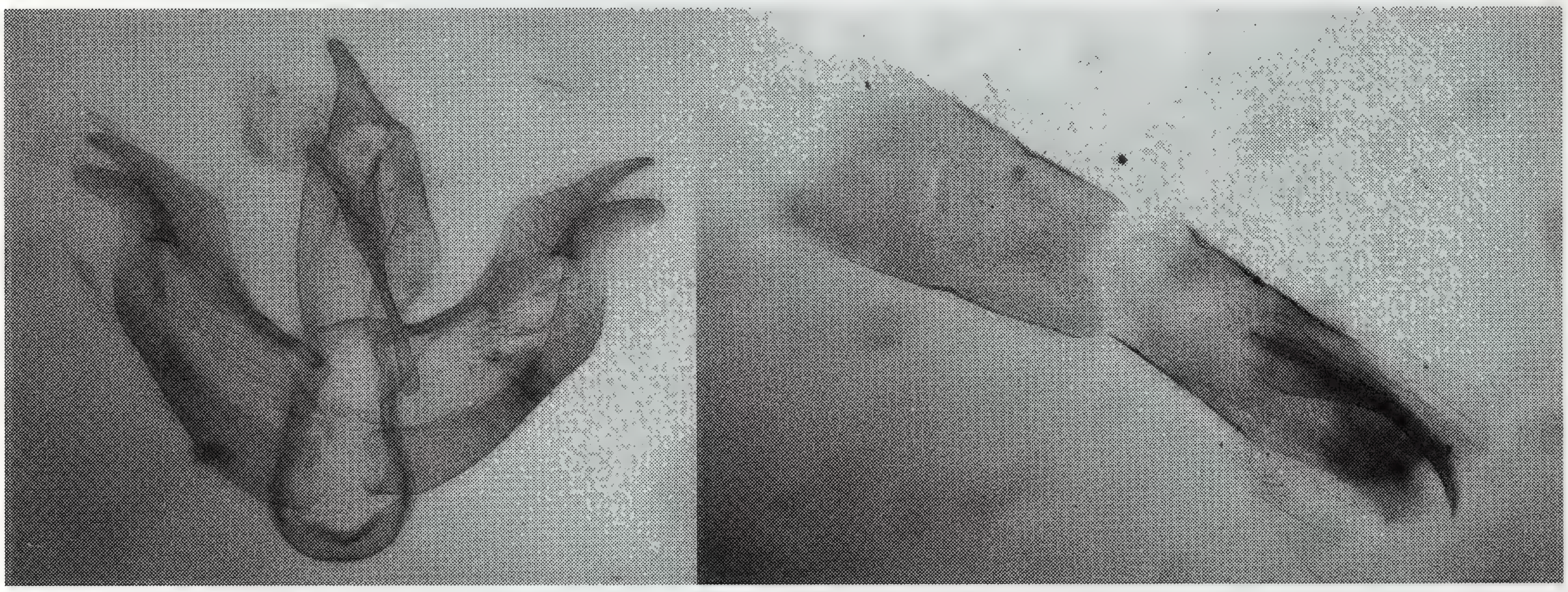

Plate 24. Male genitalia of *Barea absolaea* (Meyrick). 1. Genital capsule; 2. Detail of aedeagus. Photographs © Jon Clifton.

History of captures (LO & HO)

A photograph has been traced of a moth caught at Penzance in 2004; this appears to be the earliest recorded example. Micro-moths were not recorded in 2005 and no record of numbers was kept from 2006 to 2007 because the significance of the species was not yet apparent. In 2008, 36 males were recorded in the light trap during 41 trap nights in the period from 2 April to 16 September with 13 nights producing moths. Peak numbers were 7 on 16 May and 4 on 23 July.

The year 2009 brought a total of 65 moths from 37 nights trapping between 10 May and 30 August, 24 nights producing individuals. Peak numbers were 11 on 25 May and 10 on 29 May.

In 2010, from 17 May to 21 August there 71 moths in 33 nights of trapping, with 29 nights producing specimens. Peak numbers were 11 on 8 June and 8 on 18 June.

The 2008 and 2009 figures show gap of 2 weeks in late July and then smaller catches, perhaps suggesting two generations. First and last dates recorded are 2 April and 16 September, respectively. Like most areas, the south-west had an unusually cold winter in 2009/2010, but although the catches started later the number of moths in 2010 has already exceeded the previous year total.

Discussion

According to Common (2000: 167), *B. asbolaea* is part of the *B. periodica* group, with five of the eight described species of this group occurring in southern

Queensland, four in New South Wales, two in Victoria and one each in Northern Queensland and Tasmania. Common also states that 24 un-described species are known. However, in an e-mail Ted Edwards comments, '*I have looked carefully at the collection and, contrary to Common, I can only definitely identify* B. asbolaea *from Tasmania and so I must assume that this is the source of the British population'*.

The particular origins of British *B. asbolaea* may well be the Trewidden Ornamental Garden and Nursery, where exotic plant importation and cultivation started in the 1860s. The gardens are about half a mile (800 metres) from the trap site. Richard Morton, Head Gardener at Trewidden informs us that by far the most frequent importation from Southern Australia and Tasmania was of the tree fern *Dicksonia antarctica* in the period to 1870 to 1880. They have very rough 'hairy' trunks and could easily harbour eggs, larvae or pupae for the two-month crossing by sailing ship, although we have no evidence that this is the case and another, more recent, source is equally possible.

By chance, LO & HO arranged a lamping evening at the gardens for the Cornwall Moth Group on 20 April 2007. Although running seven lights just at the start of *B. asbolaea* 'season', the evening produced no examples. This year, 2010, LO & HO held another overnight trapping session with six light traps; this produced a total of seven *absolaea*. This reinforces the idea that the moths have been there for some years and have spread from the gardens to the main trap site, finding it equally attractive to the formal gardens there.

It is possible too that the moth has 'spread' to the other site at Crows an Wra unaided, although as far as we are aware two recorders running lamps midway between the two sites have yet to find any *Barea* specimens. Another ornamental garden, about one mile away from Crows an Wra also introduced plants of *Dicksonia antarctica* – in the 1920s. It is not inconceivable that Crows an Wra has a separate population originating there. We do not know if these plants were introduced to other sites in the UK nor do we know the full history of importations of other plant species.

Life History (CWP)

The majority of the Oecophorinae feed, as larvae, on decaying vegetation or the fungi associated with it (Harper, Langmaid & Emmet, 2002). However, whilst imported trees of *Dicksonia antarctica* may, perhaps, be the source of British material and may provide the necessary larval requirements, the numbers of adults caught in the garden at Penzance surely suggest that the moth has established itself on an alternative. In Southern Australia, the larvae of some other *Barea* species are associated with dead Gorse *Ulex* stems, but the genus is poorly researched and contains several undescribed species so that current predictions concerning the larval pabulum lack any form of support.

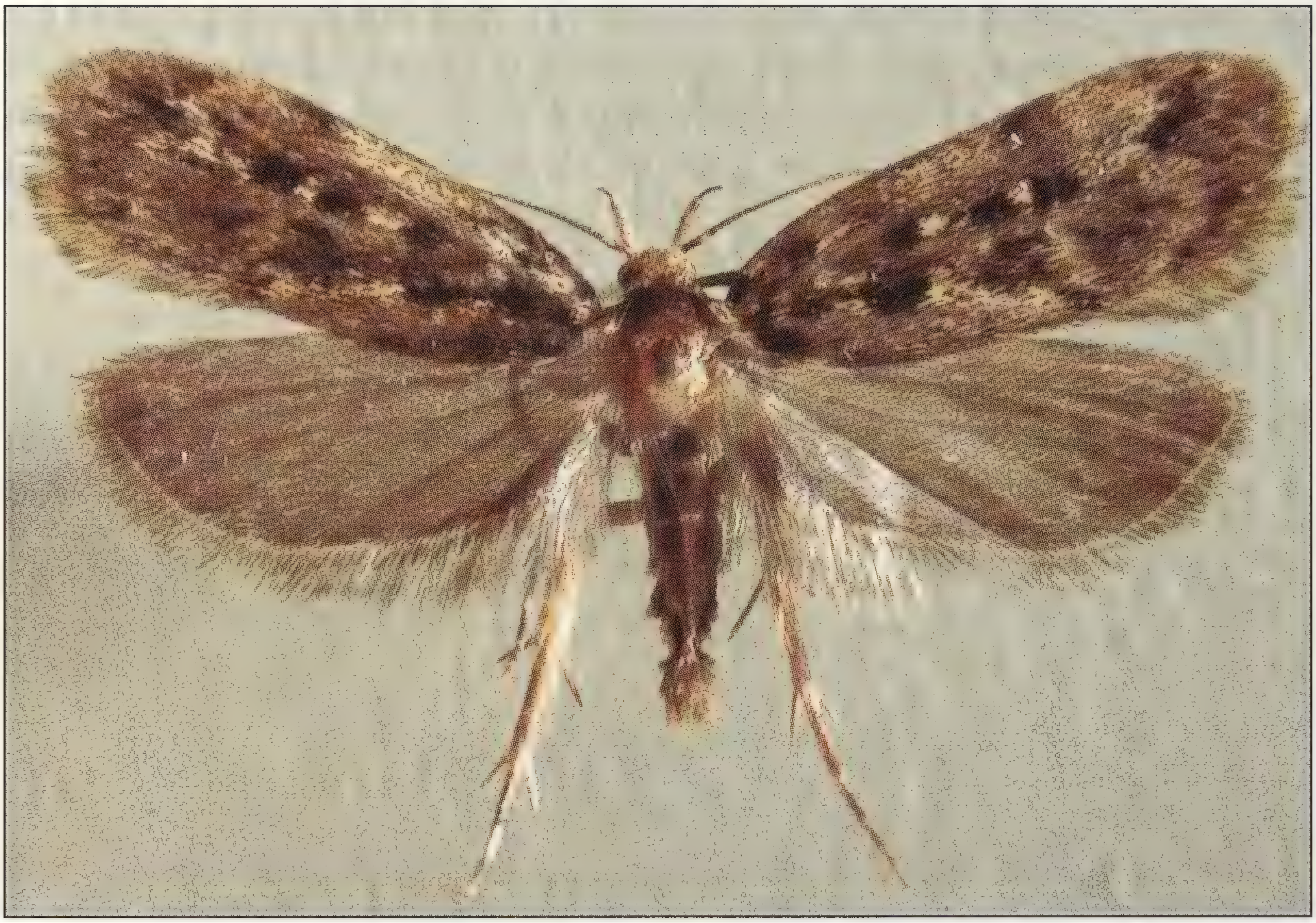

Plate 25. *Barea absolaea* (Meyrick), male. Penzance, 2010, Leg. L. Oakes & H. Oakes. In coll. CWP. Photograph © Colin W. Plant.

Checklist (CWP)

The genus *Barea* is restricted to the Australian area (indeed, the majority of known species of Oecophorinae are native to Australia itself) and so determining the correct position of this genus in a checklist for a completely different biogeographical region is not necessarily an easy task. There is some minor evidence to suggest a position close to *Hofmannophila* Spuler, but the process is not helped by the fact that most Australian lists order their oecophorine genera alphabetically. We have been unable to arrive at any conclusion and so we suggest that for the time being *Barea absolaea* is simply added at the end of the Oecophorinae in the Bradley (2000) checklist, in position 656a, until such time as a review of the group is undertaken. Whilst this is unsatisfactory, it will nevertheless allow computer programmers to amend their software so that the species can be recorded.

Acknowledgments

We would like to thank Frank Johns for his undaunted enthusiasm, encouragement, identification work, setting and dissection of *B. asbolaea*. For their research, helpful comments and opinions we also thank David Agassiz (Weston-super-Mare), Martin Honey (Natural History Museum, London), Peter Huemer (Innsbruck), Ole Karlsholt (Copenhagen), John Langmaid (Southsea), and Kevin Tuck (Natural History Museum, London). We also thank Ted Edwards, Robert Hoare, Dr Marianne Horak and You Ning at the Australian National Insect Collection for their comments, photographic images and subsequent determination. Richard Morton, Head Gardener at Trewidden provided information on importations of plants from Australia to the gardens.

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Welsh Wave *Venusia cambrica* Curtis (Lep.: Geometridae) in Middlesex

As a relative newcomer to mothing, there are undoubtedly many species yet to be added to my garden list, but I was most surprised to capture a single example of a Welsh Wave *Venusia cambrica* in the trap on the night of 2 August 2010. The trap comprises a Skinner-pattern box surmounted by two 30 watt actinic tubes; the moth must have been attracted by the light, but actually landed on a lit patio window where it was collected in a pot. The identification was confirmed by Martin Honey and John Chainey at the BM(NH).

My back garden fence marks the border with Fryent Country Park. The first few metres of the park have a good variety of trees, including Ash, willows, oaks, Field Maple and various non-native evergreens. The trap is placed approximately 2.5 metres from the fence. It is likely, of course, that most of my 'garden' moths must have come from the park.

Its distribution in the British Isles lies west of a line drawn, approximately, between Dartmouth in the south and Flamborough Head in the north, with just four reports east of this. The presence of this species in the south-east of England is, therefore, most surprising and currently unexplained. A search of the Internet revealed a second (unpublished) record of Welsh Wave at a garden trap in Densole, Kent, on 7 August 2010, by Tony Rouse.— DEBBIE PLEDGE, 29 Saltcroft Close, Wembley, Middlesex, HA9 9JJ.

A NOTE ON THE EARLY STAGES OF *OLETHREUTES SCHULZIANA* (FABRICIUS, 1776) (LEP.: TORTRICIDAE)

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Abstract

An account is given of the larva of *Olethreutes schulziana* (Fabricius, 1776) feeding on Crowberry *Empetrum nigrum* and Heather *Calluna vulgaris* in the British Isles. There appears to be no prior record of the larva having been found in the British Isles and, according to continental European literature, *Empetrum nigrum* has not been previously recorded.

Key words: Lepidoptera, Tortricidae, *Olethreutes schulziana*, larva, *Empetrum nigrum*, foodplants.

Introduction

The first larval description that I can trace of *Olethreutes schulziana* is that of Hannemann (1961), who states that the larva is yellow-green with the upperside dark green and the head brown ('Raupe gelbgrün, mit dunkelgrüner Oberseite, Kopf braun.'). He lists Cranberry *Vaccinium oxycoccus* and *Calluna vulgaris* as foodplants and gives the larval period as September to May.

It appears that Bradley, Tremewan & Smith (1979) were the first to provide a larval description in the British literature, in the following terms: 'Head brown mottled with blackish brown; prothoracic plate and thoracic legs blackish brown; abdomen dark green dorsally, yellowish green ventrally; pinacula concolorous with integument, inconspicuous'. Because they comment that the foodplant is unknown in the British Isles but in continental Europe the larva feeds on *Vaccinium oxycoccus* and *Calluna* living in a silken tube low down on the plant, it would appear that their description must be based on a continental European source, probably Hannemann's, although their larval description is more detailed than his. They give the larval period as September to May and the pupal period as May and June.

In the introduction to his publication Hannemann acknowledges contributions made by various people, including Dr J. D. Bradley. Therefore it is possible that Hannemann may have given Bradley more detailed information about the larva subsequent to his publication.

Razowski (2003), under *Phiaris schulziana*, repeats the larval description given by Bradley, Tremewan & Smith, adding 'Larva (IX-V(VI) in spun leaves (after KUZNETZOV 1994 in small tubes on lower parts of plant) of *Vaccinium uliginosum*, *V. oxycoccus* and *Calluna vulgaris*. They feed in spring and pupate V/3-VI/1.'

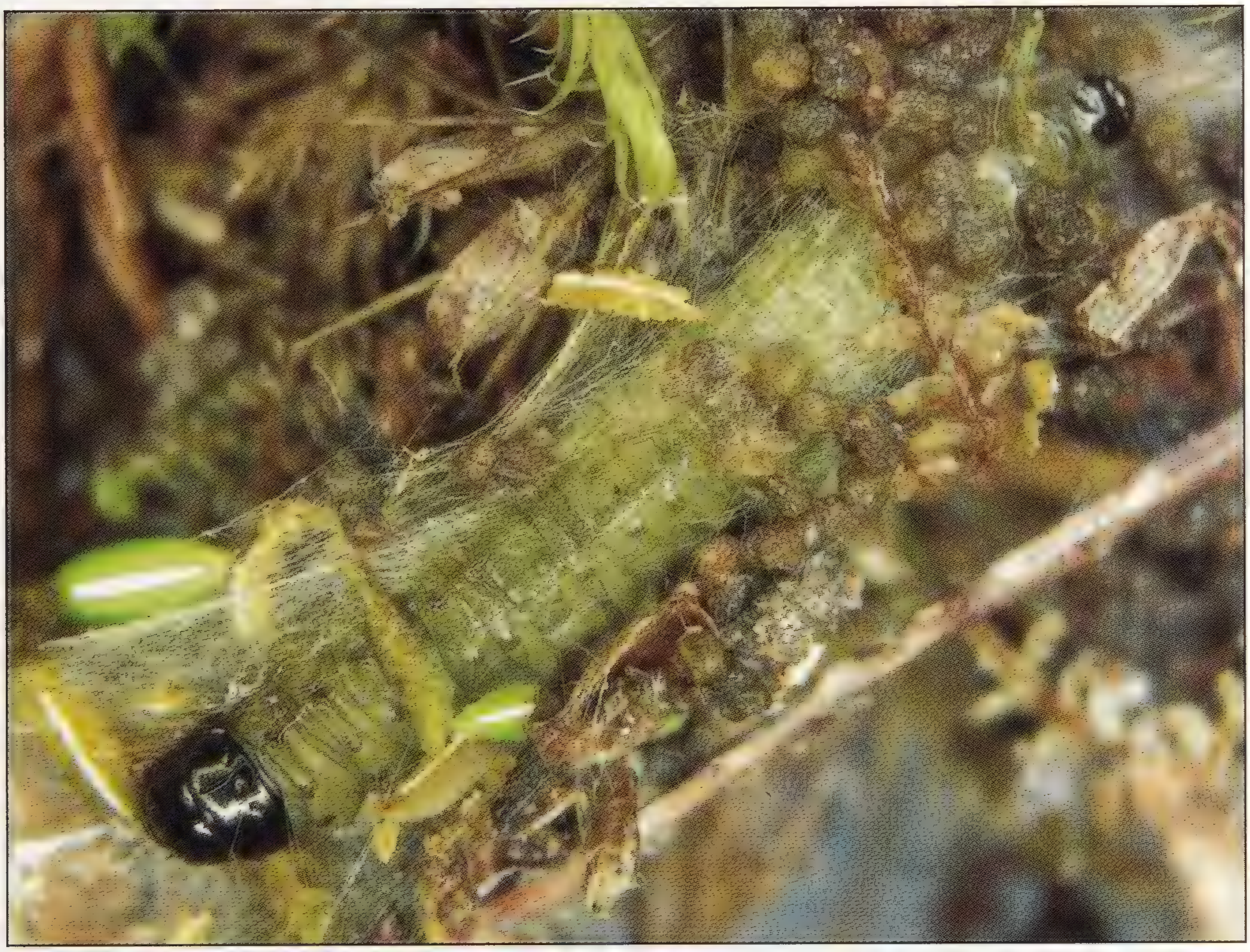

Plate 26. Larva of *Olethreutes schulziana*. Photograph © R. J. Heckford.

I am not aware of any record of the larva in the British Isles before 2009, when I found several at one locality; the identification was confirmed when moths emerged between 11 April and 22 May 2010. These differed from the descriptions set out above in that the heads were black, there was no obvious colour difference dorsally and ventrally and the pinacula were conspicuous. A more detailed description is given below.

Discovery of larvae in the British Isles

During the late morning of 15 September 2009, I found several silken tubes, between about 5-7 cm long, amongst *Empetrum nigrum* at a comparatively high elevation at Beinn Eighe, Wester Ross (VC 105). The weather was rather damp and later turned to steady rain, but fortunately I noticed the tubes before the weather deteriorated, because I doubt if I would have seen them later. This is because whilst it was damp the areas around the openings to the tubes were far more visible as a result of accumulated water droplets on the silken strands around these openings. The openings were amongst the uppermost leaves of the plants. The diameter of the tubes was surprisingly large, about 8 mm, and the tubes generally seemed to go straight down amongst the plants and were more or less the same width for their entire length. They were also quite strongly constructed with live and dead plant material spun into them. As a result, until I saw a larva I rather thought that the tubes might be the work of funnel-web spiders.

There was dark greenish frass compressed towards the lower ends of the tubes and also accumulated just outside the lower ends, and so these ends must have openings although I did not notice them. The lower ends were usually above the surface of the soil through which the plants grew. On more than one occasion when trying to investigate the tubes I found that the larvae had emerged from these lower ends and then moved quite rapidly away amongst the soil and plant debris. Later that day at a lower elevation at Beinn Eighe I found a similar tube and larva amongst *Calluna vulgaris*. I did not observe larvae either outside the tubes on the surface of the plants or even towards the upper ends; all were towards the lower ends of the tubes, or, as mentioned above, had emerged from the lower ends. I do not know if this means that the larvae only emerge to feed when it is dark. I was not able to observe when they fed in captivity. The following day in a different area at Beinn Eighe a similar tube was found amongst Bearberry *Arctostaphylos uva-ursi*, but no larva was seen.

All the larvae were kept in containers indoors and provided with *Calluna vulgaris* amongst which they constructed fresh tubes. They appeared to cease feeding by early October. It was very difficult to observe the larvae themselves but the production of frass, around the lower ends of the tubes, ceased about this time. *Sphagnum* species was then added to the containers and these were then placed in a shed outdoors for the winter. The larvae were not given any fresh foodplant whilst they were outdoors. The containers were brought indoors in mid March 2010. What had been the openings to the upper ends of the tubes were now sealed with silk and frass. I did not notice whether the tubes had been sealed in this way before I put the containers outdoors. On 27 March a pupa was observed slightly protruding from the end of one of the silken tubes, but when the lid of the container was lifted the pupa retreated within the tube and could not be seen. I subsequently noted this behaviour by other pupae. On 11 April 2010 a male *Olethreutes schulziana* emerged followed by a female the next day, a female on 5 May and a male on 22 May, all from the tubes that had been amongst *Empetrum nigrum*; a male emerged on 27 April from the tube that had been amongst *Calluna vulgaris*.

A further observation was made on 16 May 2010 when a tube was found spun amongst *Empetrum nigrum* on the lower slopes of Beinn Dearg, on the boundary of Wester Ross and Easter Ross (VCs 105 and 106). This was sealed with silk and plant debris at the upper end and when opened revealed a final instar that agreed with the larvae found in September 2009. The larva then resealed the end that I had opened, with fresh silk and dead plant debris. A female *O. schulziana* emerged on 3 June 2010.

As already noted, Hannemann (1961) and Bradley, Tremewan & Smith (1979) give the larval period as September to May and Razowski (2003) states that the larva feeds in the spring. Because the larvae found on 15 September were quite large and if not in their final instar must have been in their penultimate instar, it seems likely that the larval period commences earlier than September, probably sometime in July/August. On the basis of the larva found in 2010 it appears that in the wild in Scotland the larval period lasts until May, thus agreeing with Bradley, Tremewan & Smith (1979). It is, however, currently unclear whether the larva feeds in the spring in the British Isles. The fact that the larvae found in September were not provided with fresh foodplant whilst they were outdoors from October, a pupa was visible on 27 March and moths emerged in April suggests that, at least in captivity, the larva does not feed in the spring. In fact those larvae probably ceased feeding in October.

In my experience larvae that overwinter but do not feed again before pupating usually undergo some change in appearance during this period. The larva found on 16 May 2010 looked the same as those found on 15 September 2009, but I do not know whether this means that the larva had fed earlier in 2010 or that it had not fed since the autumn and had not undergone any change in appearance since then.

Description

Larva. *Final instar*. (Plate 26). About 20 mm long. Head black; prothoracic plate black, usually with a very narrow medial division of body colour; body olive green or yellowish green, with no obvious colour difference between the dorsal and ventral areas; pinacula comparatively small but conspicuous, slightly shiny and slightly darker than body; setae honey-brown; peritremes of spiracles black; anal plate black; thoracic legs black; ventral and anal prolegs concolorous with body, crochets black.

Pupa. Black, extended to about half its length from the upper end of the silken tube on emergence of the moth.

Acknowledgements

I am very grateful to Mr E. Maclean (Scottish Natural Heritage) for permission to record within the Beinn Eighe National Nature Reserve and Mr K. P. Bland (Glasgow) for confirming that as far as he is aware there is no earlier published record of the larva being found in the British Isles.

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Phyllonorycter muelleriella **(Zeller, 1839) (Lep.: Gracillariidae) in Glamorgan (VC 41)**

On 12 August 2009, Mike Powell and David Gilmore undertook a light trapping session on the Coryton roundabout – Junction 32 of the M4 motorway – as part of a site survey. This session produced several interesting looking micros that were passed to me for identification. These included *Argyresthia ivella*, *Agonopterix liturosa*, *Mompha locuplutella* all of which were new to the Unitary Authority of Cardiff.

However the most exciting find was a single adult *Phyllonorycter muelleriella*. Considering that this is meant to be a species associated with ancient oak woodland (which is not what you think of when talking about the Coryton roundabout), I sent a photograph of the set specimen to John Langmaid, and he happily confirmed that there was nothing else that it could be.

Given that catching a moth in a light trap is not sufficient to determine whether a species actually breeds locally, I collected a series of *Phyllonorycter* leaf mines from oak trees at the site in October 2009. These were left in my garden over the winter and brought indoors in February 2010. Some of the mines had already produced adult *Phyllonorycter lautella*, which had emerged at some point during the overwintering process and had therefore not survived. In during April, three adult *Phyllonorycter muelleriella* also emerged, confirming the presence that the species is indeed a breeding resident at the site.

Sadly none of these species will prevent the site from being developed, so the only hope is that they also occur in nearby unrecorded areas.— DAVID SLADE, 134 Templeton Avenue, Llanishen, Cardiff CF14 5JJ.

Caloptilia leucapennella **(Stephens) (Lep.: Gracillariidae) at Jealott's Hill, Berkshire**

During the autumn of 2009 I decided to try beating leylandii conifers *Cupressocyparis leylandii* and young yew *Taxus baccata* scrub at Jealott's Hill, near Binfield in Berkshire, for *Ypsolopha ustella* (Yponomeutidae). Numerous examples of this common and very variable moth were obtained during the month of September, which was especially sunny and mild.

On 21 September, at around 13.00 hours, I beat a 'caloptilid' from *leylandii*. This moth appeared at first sight to be particularly pale, and on returning home I established that this was a pale greenish form of *Caloptilia leucapannella*. Two further red/brown examples were beaten from yew on 25 September around the same time of day. A second pale green form and a third red/brown form were beaten from *leylandii* on 28 September at around 12.30 hours.

Enquiries of Martin Harvey, the Lepidoptera Recorder for Berkshire, revealed that the only prior records of this species for vice county 22 are one (undated) at Streatley, noted in the *Victoria County History* of 1906, and a second taken in Windsor Great Park in 1965 by A. A. Allen. Hence, these five examples from Jealott's Hill represent significant records for this species in east Berkshire. Martin Albertini, the Lepidoptera recorder for the neighbouring vice-county of Buckinghamshire, tells me that it has not been recorded from VC 24. Hence, it can be concluded that *C. leucapannella* is a scarce species in this part of the United Kingdom.

Jealott's Hill is an interesting area; evidence suggests that it is an outlier of Windsor Great Park. The area has many ancient Oak *Quercus robor* trees, many located at random in the middle of fields rather than associated with old hedgerow lines as is usual elsewhere in east Berkshire (for example, at Lower Earley). This historical association with Windsor Great Park is supported by the discovery of several species of microlepidoptera at Jealott's Hill that are scarce or new to the county. Since commencing to work the Jealott's Hill area in August 2005 I have recorded three such species: *Ectoedemia heringella* (Mariani) (*Ent. Rec.* **120**: 139), *Parornix carpinella* (Frey) (*in lit.*) and *Dystebenna stephensi* (Stt.) (*Ent. Rec.* **120**: 146). Although *E. heringii* is a recent colonist in the UK, it is so numerous at Jealott's Hill on large Holm Oaks *Quercus ilex* that its discovery here may indicate a lack of recording in the local environs. The other two species are more interesting, in that they may represent relict populations from Windsor Great Park managing to maintain themselves on the oaks and Hornbeams *Carpinus betulus* growing at Jealott's Hill today.

Other unusual species of Lepidoptera for Berkshire recorded at Jealott's Hill since August 2005 include *Calybites phasianipennella* (Hb.) (*Antea*: 30-31) and *Metriotes lutarea* (Haworth) (*Ent. Rec.* **121**: 202). Both are present as strong breeding colonies at Jealott's Hill. The larvae of both feed on low-growing plants (Red Shank *Polygonum persicaria* and Greater Stitchwort *Stellaria holostea*, respectively) which are common denizens of woodland borders and clearings and grow abundantly in field borders and under hedgerows at Jealott's Hill.

It is perhaps significant that an example of the Heart Moth *Dicycla oo* (L.) and the Merveille-de-jour *Dichonia aprilina* (L.) were recorded at MV light at Jealott's Hill in 1977 (Jon Cole, pers. comm.). Both these species are well known for their association with Windsor Great Park. It will be interesting to see if, in time, other species noted for Windsor Great Park are recorded in the Jealott's Hill area. — IAN SIMS, 2 The Delph, Lower Earley, Reading, Berkshire RG6 3AN.

Chestnuts galore

The sight of over 400 moths of a single species in and around a single trap is quite an unusual one for most moth trappers. When the month is March and the species is Chestnut *Conistra vaccinii* it is quite remarkable.

Over the last three years I have set moth traps at a number of locations across West Lothian (VC 84) throughout the year. This has included the early part of the year during any relatively mild conditions. In 2010, conditions were not sufficiently benign until mid-March. Over the relatively mild nights of 13 and 14 March more than 1,000 Chestnuts were caught using two traps at two woodland sites. These numbers are significantly higher than those seen in previous years.

Observations by a number of other recorders also indicate unusually high numbers of Chestnuts caught in Spring 2010. These include:

> Neil Gregory in Inverclyde (VC 76) with 28 Chestnuts compared to usual maxima of four or five (per Scottish Moths forum);
>
> Margaret Currie on the Black Isle (VC 106) with 92 on 12 March 2010 compared to a previous maximum of nine (per Scottish Moths forum);
>
> Colin Plant in Hertfordshire (VC 20) was staggered to get 99 in four 8-watt actinic traps at Bloodhounds Wood, Bishops Stortford, on 19 March 2010 – an unprecedented number, with two or three in a trap being normal (pers. comm.).

Chestnuts typically emerge in September and fly throughout autumn before hibernating until Spring. Chestnuts may seek out oak leaf-litter for their hibernation thus concentrating their numbers at such sites. The time of re-awakening in spring is likely to be affected by a combination of factors including day length and ambient temperature. Overnight temperatures were rarely above freezing until 12 March in 2010 and large parts of the country had significant snow covering through most of the year until this point. Some Scottish phenology data, from the East Scotland Butterfly Conservation web site, is shown in Fig. 1.

Looking at my own records I have categorised my trapping sites broadly into those with oak leaf-litter and those with other habitats. The distinction is not clear cut, but does provide an interesting perspective when comparing the average numbers of Chestnuts per trap-night in each week of occurrence. These are shown in Table 1.

In 'other habitats' the numbers of Chestnuts caught are not high and there is no distinct difference between the numbers of Chestnuts caught in Autumn and Spring. The picture is quite different in habitats with oak leaf-litter with significantly higher numbers trapped. There is also a distinct bias towards spring. The spring of 2010 appears to be exceptional. A combination of at least two factors may well be responsible:

A delayed re-awakening due to the severe conditions thus compressing the emergence period is very likely to be the case, but the numbers caught over a

Week Number	Month	Oak Leaf Litter			Other habitats		
		2007-08	2008-09	2009-10	2007-08	2008-09	2009-10
39	Sep			3		1	1
40	Oct		2		1		3
41							2
42				2	1	4	1
43					1	8	
44	Nov						2
45			9			3	1
	Dec					1	
53		2					
03	Jan	7					
06	Feb	15					
07						4	
08		5	15			6	
09	Mar	1	27		3		
10		4	34		2		
11		6	21	110	2		
12		2	15	125		4	
13			15	6			2
14	April		25	150	3	1	1
15		1					8
16		1		11		1	5
17		3	7		1	1	
18	May	1			2	1	

Table 1. Average number of *Conistra vaccinii* per trap night for each week in the year and habitat indicated.

period of four weeks suggests that this is not the only factor. There are higher numbers of Chestnuts awakening in 2010 than in the previous years. High numbers not being caught in the Autumn of 2009 appears at first sight to contradict this, but relatively few Chestnuts are caught in Oak leaf-litter sites in Autumn. This is perhaps due to their hibernation starting on cold nights when trapping has not occurred or possibly the moths are not so attracted to light when focussed on finding a hibernation site. A further factor might be due to lower mortality rates as a result of the snow cover providing insulation from cold temperatures and also some protection from predators.

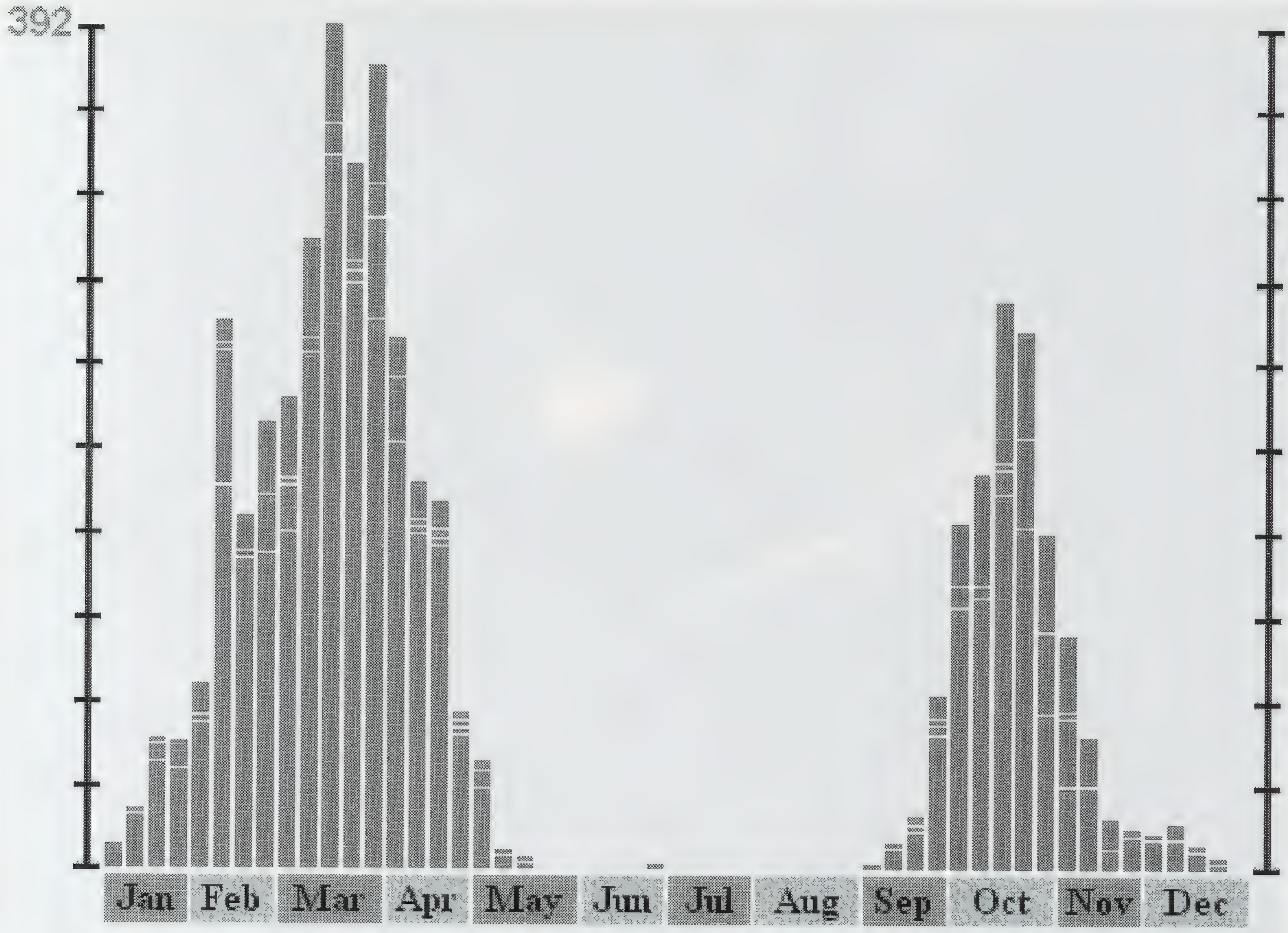

Figure 1. Phenology of *Conistra vaccinii* in eastern Scotland from http://eastscotland-butterflies.org.uk/mothflighttimes.html

My thanks go to Neil Gregory, Margaret Currie, Roy Leverton, Glyn Collis, John Knowler, Colin Plant and to members of the Scottish Moths forum for their input.— MARK CUBITT, 12 Burgh Mills Lane, Linlithgow, West Lothian EH49 7TA (E-mail: moths@cubes.f9.co.uk).

A record of *Cydia inquinatana* (Hb.) (Lep.: Tortricidae) from Suffolk

Public moth nights are a regular feature of the summer at Minsmere RSPB reserve on the Suffolk coast. With over 20 visitors attending and warm, still, humid conditions the event on 13 June 2009 was destined to be a busy night. Three 125-watt MV light traps and a fourth bulb suspended over a sheet were set up between the old car park and the North Wall on the reserve. By 02.00 hours, when the last of the visitors had retired, a total of 191 species of moth had been recorded, seven of which were new to the reserve list. One of these was an unfamiliar tortricid (Plate 27) which was taken at the sheet early in the evening. It was later photographed and dissected by JBH (Plate 28, Figs 1 & 2). Referring to Razowski (2001. *Die Tortriciden (Lepidoptera, Tortricidae) Mitteleuropas*. Slamka, Bratislava) the genitalia proved to be a good match for a female *Cydia*

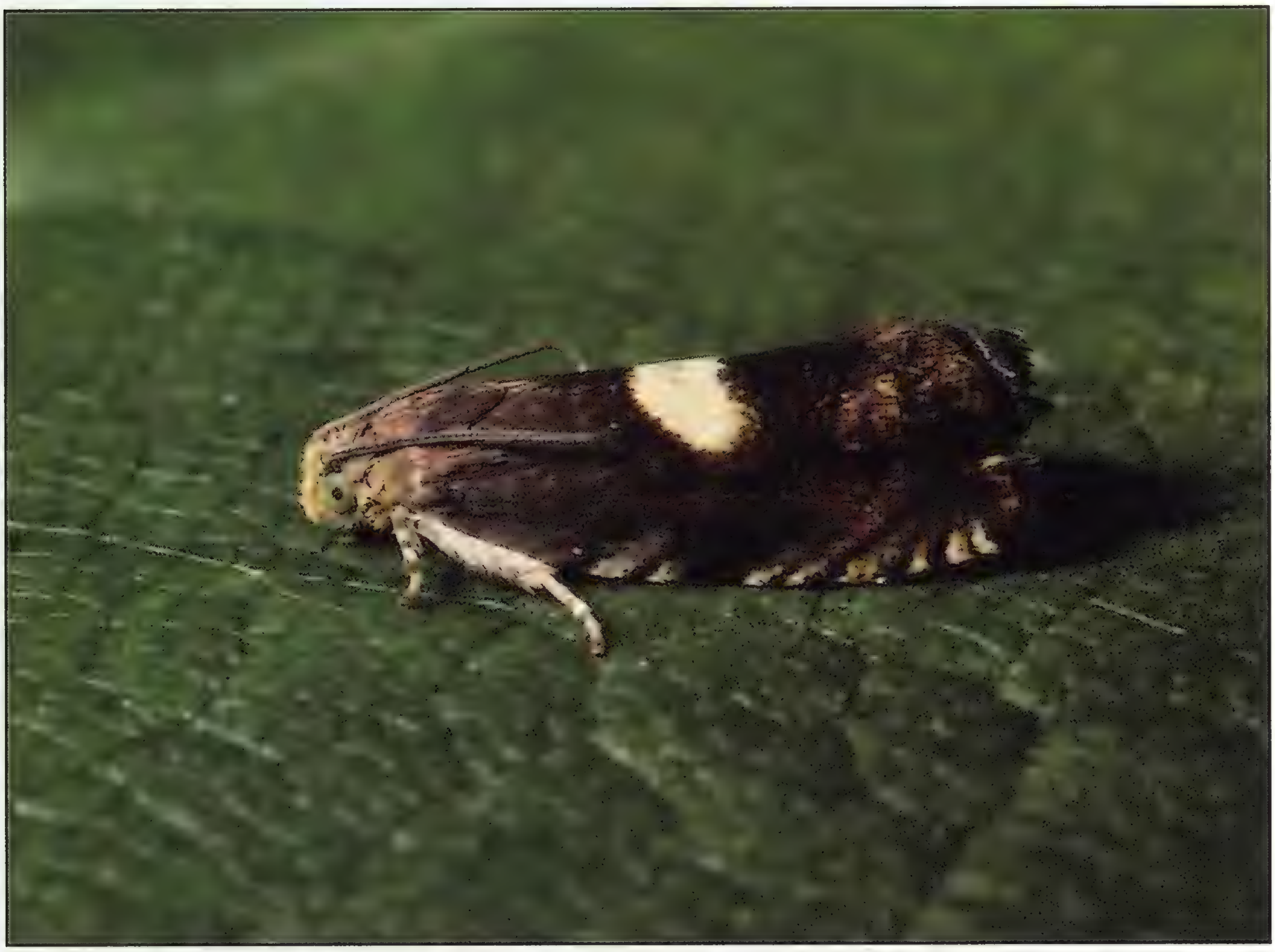

Plate 27. *Cydia inquinatana* (Hb.) Female. Minsmere RSPB Nature Reserve, East Suffolk, 13 June 2010. Photograph copyright © Jeff. B. Higgott.

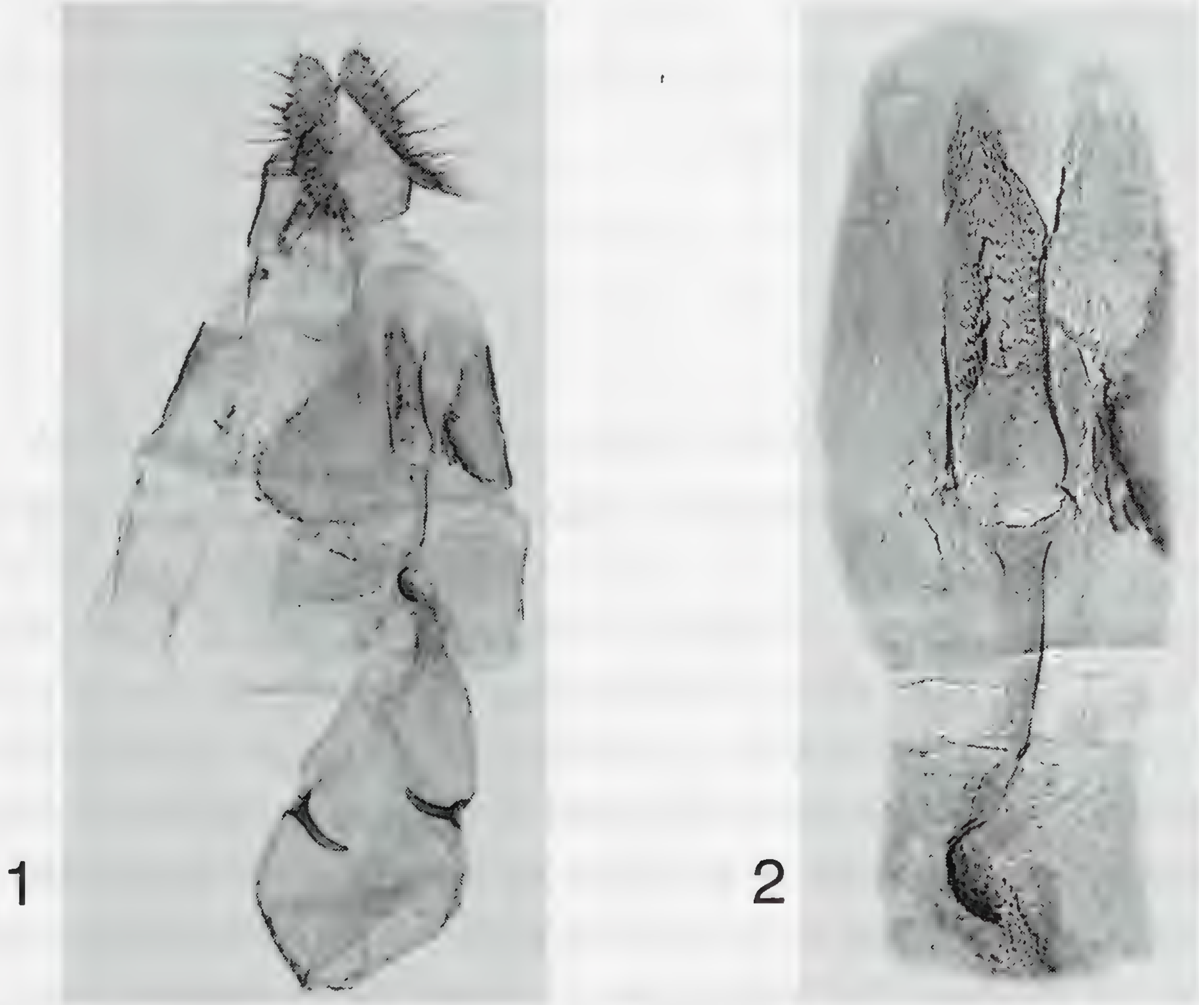

Plate 28. Female genitalia of *Cydia inquinatana* (Hb.) Minsmere RSPB Nature Reserve, East Suffolk, 13 June 2010. 1. Entire genitalia; 2. detail of colliculum. Photographs copyright © Brian Goodey.

inquinatana. Considering that this might be a slightly fanciful identification, photographs were e-mailed un-named to Brian Goodey. Brian's reply with the same identification confirmed the earlier suspicions.

There is an entry for *Cydia inquinatana* in Bradley, Tremewan & Smith (1979. *British Tortricoid Moths*. Ray Society). Volume 2 of this treatise eloquently articulates the background to the species' consideration as British:

'*This European species was apparently added to the British list by Stephens (1829: 175) who included it in his systematic catalogue as a variety of* janthinana. *Precise locality data were not given but the species was marked by an asterisk, indicating that it was taken in the London area. Subsequently, in his list of British specimens in the collection of the British Museum, Stephens (1852: 92) records inquinatana as a separate species but again without locality data; the species was again marked by an asterisk which in this instance signifies that it is doubtfully British.*'

The two Stephens references cited in this extract are: 1829. A systematic catalogue of British insects. *Haustellata*: 338 and 1852. *List of specimens of British animals in the collection of the British Museum, part X, Lepidoptera*. pp. xiii, 120. London.

Despite the lack of a verified specimen and Stephens' assertions, Bradley (2000) included *inquinatana* in his *Checklist of Lepidoptera recorded from the British Isles. Second edition* with the catalogue number 1263, albeit with the 'unconfirmed' caveat. With the 2009 Suffolk record *inquinatana* can now fully justify its position in the British list.

Cydia inquinatana is a widespread species in Europe and appears to be spreading on the near continent. It was unrecorded in Belgium until 2003 (De Prins & Spronck, 2004. Four new species for the Belgian fauna (Lepidoptera: Gracillariidae, Coleophoridae and Tortricidae). *Phegea* **32**: 49-54). The foodplants of this species are Sycamore *Acer pseudoplatanus* and Field Maple *A. campestre* and with these species being widespread in Britain the moth must be considered a potential colonist. The Minsmere specimen had a supporting cast of four Rannoch Loopers *Itame brunneata* on the night of its capture (Higgott & Davey, 2010. Rannoch Looper *Itame brunneata* in Southern England in 2009. *Atropos* **10**: 26 – 34), though there was little other evidence of migrant activity. Although the moth was trapped very close to mature Sycamore and Field Maple trees there were no other *inquinatana* specimens found on the reserve in subsequent evenings, which supports the suggestion that this was a primary immigrant.— JEFF B. HIGGOTT, 42 Valleyview Drive, Rushmere St. Andrew, Suffolk IP4 5UW and ROBIN M. HARVEY, RSPB Minsmere, Westleton, Suffolk IP17 3BY.

The Raspberry Clearwing *Pennisetia hylaeiformis* (Laspeyres) (Lep.: Sesiidae) in Hertfordshire, VC 20

Pennisetia hylaeiformis was first discovered in Britain in October 2007, when Jim Reid found feeding signs on Raspberry *Rubus idaeus* canes in his garden in Meldreth, Cambridgeshire. In 2008 he then found more feeding signs at nurseries in north Hertfordshire, followed by adults attracted to pheromones later in the year (*Ent. Rec.* **120**: 165-170). Also in 2008, during the first week of August, Colin Plant trapped a male at the HYL pheromone lure in his garden in Bishops Stortford (pers. comm.).

In 2009, a group comprising: J. Childs, P. Chapman, J. McGill, W. Urwin, H. Taffs, K. Tailby, P. Hammond, P. Clarke, M. Deans and P. Bryant also used synthetic pheromone lures to investigate Raspberry stands at Rye Meads RSPB reserve. Here they produced eight adults on 23 July, and on 25 another six were found. These included a female apparantly egg-laying on the upper surface of Raspberry leaves at about 10.40 am (C. W. Plant, pers. comm.). During subsequent days, they continued to be seen in varying numbers, with many keen people 'twitching' the spectacle (J. Childs, pers. comm.).

On 30 July 2009, a single male was discovered nectaring on Purple Toadflax *Linaria purpurea* in the author's garden in Kimpton (O. S. grid reference TL 172184). Upon examination of Raspberry canes in the garden an emergence hole was found, thus confirming the origin of the moth.

An account of the life history of *P. hylaeiformis* is given by Jim Reid in his article (Reid, *op. cit.*), but it is worth mentioning here some additional information discovered by Colin Plant when investigating the Raspberry canes in his garden in early April 2010. Searching through the previous year's dead stems, he found several mature larvae. All were in the bottom couple of centimetres, at about soil level in the part of the stem that looks, externally, to be damp. Interestingly there were no signs of the galls that have often been mentioned in relation to this species. As Reid describes, in spring the larvae leave the roots where they have hibernated and re-enter the stems. Here they mine a bit further up before cutting an emergence hole and then pupating within the mine just below the hole. Therefore, Colin suggests that to ensure a breeding colony is maintained, it is essential that dead stems are not cut off at ground level, but at about 15 centimetres.

Thankfully, since the larvae only affect dead canes that have already fruited, they do not appear to damage the plant or reduce the crop. This may explain why it looks likely that *P. hylaeiformis* is much more widespread than previously expected, and may well have been resident but overlooked in Britain for quite some time. By all accounts there are many people intending to search for *P. hylaeiformis* this year, as pheromone sales have been very high. It is therefore very likely that our knowledge of this species' distribution of will expand rapidly in future years.

Many thanks to Colin Plant, the Hertfordshire and Middlesex Moth Recorder, for information regarding this species' distribution and biology.— Philip J L Gould, Co-ordinator of the Rothamsted Insect Survey Light-trap Network, Plant & Invertebrate Ecology Department, Rothamsted Research, Harpenden, Hertfordshire AL5 2JQ (E-mail: phil.gould@bbsrc.ac.uk).

Editorial Comment: During 2010, I have again taken a male in my Bishops Stortford garden, in a pheromone trap amongst the raspberry canes on 21 July; in addition I collected a larva that subsequently pupated but which, in spite of still being alive, has not yet emerged at 27.ix.2010. Additionally, an adult was photographed at rest on a flower by Trevor Chapman on an allotment garden at Wheathampstead, Hertfordshire at around 16.00 hours on 3 July 2010. Other Hertfordshire records may be awaiting submission at the end of the year.

Diaphania perspectalis (Walker, 1859) (Lep.: Crambidae) in Hertfordshire

A male of this large and distinctive crambid was caught at light in a garden in Bishops Stortford, Hertfordshire on 8 August 2010 by us. This seems to constitute the fifth British report of an adult of this species.

Diaphania perspectalis is a native of China, Japan and Korea. Its larvae feed on the leaves and shoots of Box *Buxus* sp. and severe infestations can lead to almost complete defoliation of the plants. Data is lacking on the biology of the species, but in Shanghai, China, three and four generations per year have been observed with six to seven larval instars. Larvae pupate on the leaves. The species features on the Alert List of the European and Mediterranean Plant Protection Organization (EPPO).

The moth was found new to Europe in 2007 although there are apparently competing claims for the first record. Billen, W., (2007. *Diaphania perspectalis* (Lepidoptera: Pyralidae) – a new moth in Europe. *Mitteilungen der Entomologischen Gesellschaft* Basel **57**: 135-137) records it from five different locations around Basel, Switzerland whilst Krüger, E. O., (2008. *Glyphodes perspectalis* (Walker, 1859) – new for the European fauna *Entomologische Zeitschrift* **118**: 81-83), notes it in May 2007 in the city of Weil am Rhein and its surroundings, Baden-Württemberg, Germany. It is assumed that the two papers were published each in ignorance of the other. In 2008 there were further German records, with examples at Baden-Württemberg and at Niedersachsen and Nordrhein-Westphalen and in the same year there were reports from four separate locations in the Netherlands. According to the EPPO web site eradication measures are being implemented in Germany, although for the moment, no specific measures are taken in the Netherlands.

The first British record was evidently made at a garden in Weybridge, Surrey on 4 September 2008 by Andrew Mitchell (Mitchell, A., 2009. Boxworm Moth *Diaphania perspectalis* (Walk.) – a pyralid moth new to Britain and Ireland. *Atropos* **36**: 17-18), in which it is recorded as the morning of 5 September 2008. Two further examples were noted at Icklesham, East Sussex on 23 and 24 September 2008 (K. Thornton & P. Jones, det. M. Parsons) and are recorded in an editorial note following the report by Mitchell (2009) – incorrectly attributed to Mitchell by Clancy (2010. Occurrences of the scarcer moth species in 2009. *Atropos* **39**: 22). One was also noted in South Essex at Leigh-on-Sea on 18 September 2009 (Clancy, *op. cit.*).

As far as larvae are concerned, Clancy (*op. cit.*) notes an unpublished reference, on a website that longer seems to function so that the details are obscure, to larvae being found in Britain at Surrey, feeding on *Buxus* in a nursery, by Korycinska & Eyre. There are no other published reports.

It is interesting to observe the closeness of the dates of the 2008 British records and to speculate on the possibility of these being immigrants from the Netherlands. The 2010 record is more likely from importation?— James Fish, 6 Lindsey Close, Bishops Stortford, Hertfordshire CM23 2TB (E-mail: james.fish1@sky.com) and Julian Reeves, 30 Lindsey Road, Bishops Stortford, CM23 (E-mail: julian.reeves@ntlworld.com)

A tale of two Water Bugs: *Notonecta glauca* L., 1758 and *Corixa iberica* Jansson, 1981 (Heteroptera)

A chance find in July 2009 of backswimmers *Notonecta glauca* in Golden Water, an oligotrophic lochan on Fair Isle (Shetland), prompted a Fair Isle Wildlife Club investigation of how many of this species, never previously recorded on the isle, were present. This was held on Saturday morning 8 August 2009 and was attended by four adults and five bairns from the isle, Netherlands and Germany. With six nets in operation, it quickly became apparent that Golden Water was full of this new arrival; there were several backswimmers, adults and a few nymphs, in every capture. In contrast our speciality, the large water boatman *Corixa iberica*, was in very short supply. In previous years we would have caught it in much the same numbers as for backswimmers this time, but the final count for the *Corixa*, from five of the six nets operating fairly continuously for ninety minutes, was one near-adult and six nymphs.

Corixa iberica Jansson was described as new to science as recently as 1981. It is known from a small number of sites according to literature at my disposal, stretching from north-west Portugal to Shetland, and is considered a post ice age relict (P. Kirby, *in litt.*). It has Nationally Scarce (Nb) status in the UK. It may have been more widespread pre-ice age but is now restricted to sites along the north-east Atlantic seaboard. Ponds and lakes beyond the influence of extreme Atlantic conditions are occupied by a sibling species *Corixa punctata* which may out-compete *C iberica*. However, the effect of salt-laden winds on the water chemistry of pools closest to the worst the Atlantic weather can throw at us appears to discourage that sibling species from pushing to the westernmost limits of Europe and provides a refuge for this "Iberian" water boatman – which otherwise could be heading for extinction.

Although *Corixa iberica* was only recognised as a distinct species in 1981, it was certainly present on Fair Isle from at least that time. It was impossible to overlook because of its abundance and large size. However, it was only in 1994 that it was identified as such, kindly verified by Dr Peter Kirby. I was able to confirm its presence in a variety of water bodies, from quarry pool to peat-stained lochan. Aquatic vegetation seemed to be a constant and the only sites I did not find it were very shallow unvegetated pools liable to summer dessication. This supports the opinion of Jansson that it is a geographical replacement for *C punctata* rather than a species of very special habitats (Savage, 1989. Adults of the British aquatic Hemiptera Heteroptera: a key with ecological notes. *Sci. Publ. Freshwat. Bio. Assoc.* **50**: 1-173). One factor common to all Fair Isle water bodies is a liberal dousing of salt spray during winter gales. Intolerance to wild North Atlantic weather may be the only factor keeping *C punctata* at bay.

The backswimmer is one of a suite of insects which have been pushing north-west in recent years. According to the Catalogue of Life: 2007 Annual Checklist (GBIF Data Portal, 2010), it is widespread in Britain and the Continent, though scarce in north Scotland (one site in Caithness, for instance) and, until now, the northernmost record was from South Ronaldsay (Orkney). Despite its apparent clumsiness when removed from water, it is a very strong flier and our colonists will have arrived under their own steam, possibly even from the Continent. It is an extremely aggressive predator, catching prey almost as large as itself and sucking the juices from its capture through a stiletto-like tube. The power of this tube was felt by two of the participants – my warnings did not get through to them! One of them described it as being more painful than a bee sting. We observed this aggressiveness when I put a couple of the Iberian water boatmen into a large tray already containing backswimmers. With great speed and agility, two backswimmers immediately jumped ferociously on one of the Iberians and I had to intervene in some hurry. From then on we separated other water boatmen and beetles into a backswimmer-free container. Despite this I later found two small water beetles floating in the tray... minus the head.

How long has the backswimmer been with us? Our last pond-dipping exercise at Golden Water was two years previously. We did not detect it then. It is large and distinctively patterned, very different to our resident water boatmen and impossible to overlook. If it was present in 2007, it would have been there in very low numbers. I estimate that Golden Water now holds several thousand. This suggests that the first colonists may have arrived before this year, but still very recently; perhaps within the last two or three.

What are the prospects for our Iberian water boatman? It has already had to contend in recent years with frogs and trout, released misguidedly but with the best of intentions into Golden Water. The arrival of the backswimmer adds another layer of risk to the future prospects of our special bug. I was shocked by the scarcity of the Iberian water boatman compared with other years, and there was a paucity too of smaller water boatmen (five other species are known from Fair Isle) and of water beetles. Much of the lochan, including all the edges, is dense with the aquatic moss *Sphagnum cuspidatum*, filamentous green algae and detritus and this may provide sufficient cover for a population of our special bug to survive. Let us hope it can adapt, though for a species which was previously top of the food chain in Golden Water, the arrival of aquatic predators higher up the chain will require a rapid change in behaviour to survive.

The following Monday, 10 August, I checked two quarry pools for the invader, at Utra and Rippack. Utra pool was unvegetated and neither backswimmers nor Iberian water boatmen were found, though an adult of the small water boatman *Arctocorisa germari* was present. Rippack pool had a luxurious growth of bog pondweed *Potamogeton polygonifolius* and a few sweeps of the net immediately confirmed the presence of backswimmers – about a dozen were swept, all well grown nymphs. This suggests very recent colonisation, probably towards the back end of last summer. In previous years I encountered the Iberian water boatman without difficulty, but none was intercepted this time. In such a small pool, it may have been lost completely.

Not a year goes by without some new invertebrate being found, marine as well as terrestrial, whose arrival can be linked to climate change. It just shows what potential Fair Isle has for monitoring the effects of climate change on our wildlife. In the case of the water boatmen, with many hands willing to wield the pond-net, the Fair Isle Wildlife club is well placed to monitor the situation as it develops.

My thanks go to the enthusiastic participants in the Fair Isle Wildlife Club. Nets were provided under grant through a National Trust for Scotland-Scottish Natural Heritage concordat. Special thanks are due to Dr Peter Kirby for his help with identifications, references and insights into the ecology of the species.— NICK J. RIDDIFORD, Schoolton, Fair Isle, Shetland ZE2 9JU (E-mail: taib@mallorcaweb.net)

Prays peregrina Agassiz, 2007 (Lep.: Yponomeutidae) – a further record from north-west Kent

Prays peregrina was described as new to science in 2007 (Agassiz, D., *Nota Lepidopterologica.* **30**(2): 407-410) based on the capture of sixteen specimens between 2003 and 2007. All were found within the Greater London area, the majority to the west of central London. In the Watsonian vice-county of West Kent (VC 16), two moths were taken in the London Borough of Bromley in 2006, and two in the London Borough of Bexley in 2007 – the two localities being only a few kilometres apart. All the records were published by Agassiz (*op. cit*) and the only other record I can trace is an unpublished capture from Hoo, near the Thames Estuary in North Kent, on 24 August 2007 (Fred Butcher, pers. comm.).

The restricted distribution, widely varying dates of capture (from June to October), and the clustering of records between 2003 and 2007 strongly support the suggestion that *peregrina* is an adventive species temporarily established in the London area, presumably imported from an unknown origin on plant material. It was therefore with some surprise that I found a fresh female in my garden trap, situated in Orpington, Kent, on the morning of 6 June 2010, a location less than five kilometres from the previous north-west Kent localities.

It is, of course, imprudent to draw any conclusions on the basis of a single capture, but one is tempted to speculate that the species remains resident in the area and that given the early date of the capture (the other June records being for the 19 and 24 and the four from north-west Kent all being recorded in September), the moth is at the very least bivoltine. The moth itself is distinctive enough to 'catch the eye', but I was struck by the observation that in a busy moth trap, the species could be carelessly confused, at least in the early Summer months, with *Epinotia bilunana* Haw. (Lep.: Torticidae). The moth and genitalia are illustrated by Agassiz (*op. cit.*), and the imago is also shown on the website of UK Moths (currently *http://ukmoths.org.uk/show.php?id=4851*).— PAUL SOKOLOFF, 4 Steep Close, Green Street Green, Orpington, Kent BR6 6DS (Email: paul.sokoloff@ntlworld.com).

Ectoedemia amani Svensson (Lep: Nepticulidae) in Bedfordshire (VC30), and a review of the current British records

During the evening of 6 August 2010 Andy and Melissa Banthorpe (macro-moth recorders for Bedfordshire, VC 30) visited a woodland at Upper Alders, Chicksands, Bedfordshire (O.S. grid reference TL 1138). They operated a 125W mv light over a sheet until 23.00 hrs when heavy rain brought the proceedings to an end. Several micro-moths were later passed to DM for identification. One moth, on dissection, was confirmed as being a female *Ectoedemia amani* Svensson.

The moth recording was being carried out at the invitation of The Greensand Trust who own and manage Sandy Smith Nature Reserve, of which the small woodland of Upper Alders county wildlife site forms part. The site was purchased in 2005, management work commenced in 2007 and the woodland glade where the lamp and sheet was situated was opened up over the winter of 2009/10. Upper Alders is a damp woodland dominated by Alder (NVC stand type W6 – see Whitbread & Kirby, 1992. *Summary of National Vegetation Classification woodland descriptions. UK Nature Conservation 4. JNCC*), with occasional Pedunculate Oak, Ash, Wych Elm, Sallow, Hazel, Elder, Hawthorn and Blackthorn. Of interest is the fact that on the same evening three Lesser-spotted Pinion, *Cosmia affinis* (L.) were recorded; this also feeds on Elm.

Ectoedemia amani Svensson was recorded as new to Britain by BD at Waresley Wood, Huntingdonshire (VC 31, TL 2654) on 12 July 1994 (Dickerson, B, 1995. *Ectoedemia amani* Svensson, 1996 (Lep,:Nepticulidae) New to Britain. *Entomologist's Rec. J. Var.* **107**: 163-164). Further records from Waresley Wood are 10 July 1995 (9 moths), 11 July 1996 (4), 14 July 1997 (1), 20 July 1998 (7), 7 July 1999 (1), 24 July 2001 (2), 9 July 2003 (1), 14 July 2005 (16). No specimens were recorded in 2006, 2007 or 2010, and the site was unavailable for recording in 2008 and 2009. All the above records were of adult moths attracted to 125W Mv light over a sheet. In these years, 6-watt Actinic light traps run later in the flight period of *E. amani* did not attract the species. Maitland Emmet visited the Waresley Wood site with both of us on 2 March 1996 to search for mines, two of which were found under the bark of elm branches. The new site at Upper Alders is about 21 km south-west of Waresley Wood. The only other British record for this species is one moth recorded by BD at Brampton Wood, Huntingdonshire (TL 1870) on 15 July 2003.

Thanks are due to The Greensand Trust (www.greensandtrust.org), especially rangers Liz Millbank and Steve Squire who transported the equipment into Upper Alders by Landrover.— D. V. MANNING, 27 Glebe Rise, Sharnbrook, Bedford MK44 1JB, and B. DICKERSON, 27 Andrew Road, Eynesbury, St. Neots, Huntingdon, Cambridgeshire PE19 2QE.

SOCIETY MATTERS

'BIG SOCIETY'

We had a good response to our appeal for help in the last issue of this journal. We have two vacancies remaining on Council, and we are always on the lookout for people to represent the society at events. If you know of anyone to whom this would be of interest please do mention the opportunity to them.

We are also keen to feature new writing and ideas derived from the considerable expertise and experience of *Record* subscribers in the *Bug Club Magazine*. Please do contribute if you can, because encouraging the next generation of entomologists has never been so important.

AES MEMBERSHIP

Despite the difficult economic climate subscriptions to AES periodicals, including the *Entomologist's Record*, will remain unchanged in 2011, which means that this journal is probably the best value peer-reviewed entomological journal available. Renewal forms will accompany the next issue (Part 6) and we take this opportunity to remind you of the benefits of AES membership included in your subscription:

Promoting entomology

Firstly, as a society run by volunteers, our contribution to the entomological community depends almost entirely on member subscriptions and donations. It is only the continued support of our members and volunteers that enable us to further our aims: to promote the study of insects and other invertebrates among amateurs and the young, and to help ensure that the amateur viewpoint is represented in invertebrate conservation matters.

Periodicals

Subscribing members have the choice of the following three AES periodicals:

- *The AES Bulletin*
- *The Entomologist's Record & Journal of Variation*
- *The Bug Club Magazine*

Discounts apply if more than one periodical is taken.

In addition, *Invertebrate Conservation News* and the *Wants and Exchange List* are sent to all members over the age of 11.

We are also working on an exciting new service to replace the *Wants and Exchange List* – more details will be released soon.

E-services

Current electronic networking services include an AES Members' Area on the society's website, and an *Entomologist's Record* members' area. Both of these include access to back issues of the relevant journals.

There is also a separate, members-only AES Discussion Forum at http://tech.groups.yahoo.com/group/aes/. This can be used among other things to contact the AES identification service and advisory panel.

There are also moderated open forums which provide opportunities for members to interact more widely in an entomological context. These are: the Bug Club Forum http://tech.groups.yahoo.com/group/bugclub/ and the Lepidoptera Breeding Forum http://tech.groups.yahoo.com/group/Breeding_UK-Leps/). You can also follow us on Twitter (@amentsoc).

Members are also reminded of the Open University's iSpot website, where AES experts among others help to identify insects photographed by the public.

Networking and regular events

Our regular events include the Oxford University Young Entomologists' Day in February; the Members' Day and AGM each April; the Oxford University Museum of Natural History annual visit each September; and the annual AES Exhibition & Trade Fair in October.

Other events and field trips are held each year, and these are publicised in our periodicals on a rolling basis.

Recognition

Exhibition prizes are awarded (the Ansorge Award for the best junior member exhibits at the annual exhibition; the Bradford Award (£100) for the best exhibit by an adult member).

Literary prizes are also available (the Hammond Award for the best article in the *AES Bulletin*; the Gardiner Award for the best *Bug Club Magazine* articles)

The Cribb Award for Invertebrate Conservation is also offered, and this is also open to non-members.

The Michael Majerus Grant supports projects that encourage the next generation of entomologists. This is also open to non-members.

Special arrangements

Members can purchase AES publications at a substantial discount (normally 30%).

The same level of discount is available on Royal Entomological Society (RES) publications.

AES members have full access to the world famous RES library, and can attend RES events at the same rates as RES Fellows.

AES members wishing to join the Society of Biology benefit from a 25% discount on the cost of their first year of membership.

Members buying books from British Wildlife Publishing or subscribing to their journal (*British Wildlife*) receive a concessionary rate

AES Members have access to events of our affiliates on the same basis as their own members. Current affiliates include:

The Quekett Microscopical Club

The Conchological Society of Great Britain & Ireland

The entomology section of the Devonshire Association

Our member benefits aim to make the AES a gateway into entomology that will support your entomological endeavours whatever your age or level of involvement.

FORTHCOMING EVENTS

Details of AES and other events are listed in the Events section of the AES website www.amentsoc.org. The following are the main AES-organised events in the coming period.

26th February 2011

Young Entomologists' Day @ Oxford University

Oxford University Museum of Natural History, Parks Road, Oxford OX1 3PW.

11:00 – 4:00

This will be the second Young Entomologists' Day at Oxford, and is planned because of the outstanding success of the first YED last year.

The day will open with a talk by a well known entomologist. Children between the ages of 4 and 18 are invited to bring exhibits and/or deliver a talk, with or without slides. (Last year, most of the children gave PowerPoint presentations – including a five year old!)

Prizes will be awarded for the best presentations. There will also be tours of the Hope Collections on the day.

Saturday 30th April 2011

AES Members' Day & AGM

Butterfly World, St Albans

Our Members' Day next year will take place at the new Butterfly World attraction in St Albans, Hertfordshire. This new venue is next door to the Royal Entomological Society's offices. Further details will be provided to members closer to the time.

AES Publications

Amateur Entomologists' Society

British Butterflies throughout the year by Peter May
This new book from the AES describes the adults of different species of British butterflies, according to the time of year they appear on the wing. Nearly all the 60 British species are illustrated. Focussing on encouraging an interest in entomology among the young, and the young at heart, there is a helpful calendar of flight times and a useful checklist to help you keep track of your observations. **£ 5.00**
Members price **£ 3.80**

Preparing and maintaining a collection of Butterflies and Moths
by P. May and M. White. A practical manual detailing the various methods used to prepare specimens for a collection, from killing methods, setting the specimens and repairing damaged ones, to storage and preservation, including pest prevention and cure. 21 pages. 4 figures and 5 plates. (2006) **£4.85**
Members price **£3.65**

The Hymenopterist's Handbook by Dr. C. Betts *et. al.*
2nd edition dealing with the history of their families, classification and structures; natural history; studying, collecting, breeding, attracting and preserving Hymenoptera. Appendices include keys to the families. 214 pages with numerous tables, keys and figures (1986) **£ 11.45**
Members price **£ 8.60**

Revised Flight Tables for the Hymenoptera
Revised flight tables for the Hymenoptera giving, wherever possible, times, location, flower visits and some indication of distribution and abundance. 24 pages (1988) **£ 3.10**
Members price **£ 2.35**

A Coleopterist's Handbook
Edited by J.Cooter & M.V.L.Barclay The *Coleopterist's Handbook*, is now available as a fully revised and expanded fourth edition. Nomenclature has been brought inline with current use, collecting/curatorial methods reflect best practice and plant/beetle and beetle/plant lists are included together. Recent additions to the British fauna, modern and traditional techniques are included. All advice and comment given in the book is based upon collective years of practical experience of both curatorial methods and field craft; beetle family chapters have each been written by an internationally recognised authority. 496 pages including 32 colour plates. **£ 54.00**
Members price **£ 39.00**

Host plants of British Beetles: A List of Recorded Associations
A list of a wide range of plants, in alphabetical order, together with the beetle species that have been recorded as being associated with them. 24 pages (1992)
£ 3.10
Members price **£ 2.35**

A Silkmoth Rearer's Handbook by B.O.C. Gardiner
SPECIAL OFFER PRICE **£ 7.70**
No further discounted price available

Rearing and Studying Stick and Leaf-Insects by P. D. Brock
Specifically intended for beginners, although it is also suitable for experienced Phasmid enthusiasts, it is one of the few guides to rearing that features the majority of the culture stocks available, 22 species in detail. The informative text is complimented by 8 colour plates, 14 black and white plates and 29 figures. (New edition, 2003) **£ 11.20**
Members price **£ 8.20**

The Study of Stoneflies, Mayflies and Caddisflies by T.T. Macan
A comprehensive guide to collecting and studying the biology and ecology of these aquatic insects. 44 pages, 10 figures and bibliography (1982) **£ 4.20**
Members price **£ 3.15**

Breeding the British Butterflies by P.W. Cribb
A practical handbook covering all aspects of butterfly breeding, including general techniques, equipment and hints on how to breed each of the British species. 60 pages, 6 figures, 5 plates, Revised (2001) **£ 5.20**
Members price **£ 3.85**

Practical Hints for the Field Lepidopterist by J.W. Tutt
Written at the turn of the century, this book has been reprinted because of its scarcity and value to students of Lepidoptera. It gives a complete month by month guide to which species and stages of macros and micros to look for and how to find them. Also contains a biological account of the early stages and how to keep, rear, photograph and describe them. 422 pages. Hardback. (Reprinted 1994). **£ 24.00**
Members price **£ 18.30**

An index to the modern names for use with J.W. Tutt's Practical Hints for the Field Lepidopterist by B.O.C. Gardiner
A valuable cross-reference guide between the scientific and English names used in the early 1900s and the present time. **£ 4.70**
Members price **£3.50**

A Guide to Moth traps and their use by R. Fry and P. Waring
The first sections deal with the measurement and properties of light leading into the types of lamp available and the electrical circuits needed to operate them. The next sections give details of the construction of the most popular traps used in the UK. The last half deals with the practical use of traps in the field including where and when to trap, limitations of traps and their relative performance. 68 pages, 21 figures, 15 plates (1996) **£ 6.85**
Members price **£ 5.05**

The Amazing World of Stick and Leaf Insects by Paul D. Brock
A superb, comprehensive guide, for all those intrigued by these groups of insects. Topics covered include structure, fascinating facts, life history and development, defence behaviour, enemies, collecting, breeding (including trouble shooting), preserving, taxonomic studies, important collections in Museums etc. around the world and elaborate stories, beliefs and poems. Also outlines the major known species around the world on a regional basis. A section on Fossils is included. Includes a comprehensive glossary of the technical terms used in the description and classification of stick and leaf-insects. Hardback A5, 184 pages, 46 figures, 26 black and white plates and 40 pages of colour plates (containing 83 photographs and 4 drawings/paintings of insects and their habitats). (1999) **£ 18.90**
Members price **£ 14.10**

Rearing Parasitic Hymenoptera by M. Shaw
This booklet provides information on the parasitic Hymenoptera to enable successful studies to be made of this little understood group of the British insect fauna. Details are given on the general biology of parasitic wasps, rearing principles, efficient rearing practices and detailed methods of dealing with adult wasps. 52 pages, 4 colour plates (New edition – 2001) **£ 5.70**
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FURTHER BRITISH RECORDS OF *BARYPROCTUS BARYPUS* (MARSHALL) (HYM., BRACONIDAE) FROM NORTH KENT WITH NOTES ON VARIATION

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Abstract

Distributional and morphological data for *Baryproctus barypus* (Marshall) in Kent are summarised.

Keywords: *Baryproctus barypus*, Braconidae, Chloropidae, Kent, *Lipara rufitarsis*.

Introduction

Baryproctus barypus was described, as *Bracon barypus*, by Thomas Marshall from a female 'taken by sweeping herbage near Niton, Isle of Wight, July 26th, 1884' (Marshall, 1885). Elsewhere in Europe it has been recorded from the Czech Republic, Germany, Hungary, Romania, Russia South, Slovakia, Spanish mainland, Sweden, Switzerland, Ukraine and Yugoslavia (*www.faunaeur.org*, accessed 4 September 2009). The known British records were summarised by Shaw (1994) and Shaw & Quicke (1999), the majority being from the Norfolk Broads. Jennings (2008) reported rearing three females from galls, or presumed galls, of *Lipara rufitarsis* (Loew) (Dipt., Chloropidae) collected at Shorne (TQ6973), Kent. These emerged during July 2005 and July 2007 from material collected in April 2005 and May 2007 respectively.

Kent records 2008-2009

During 2008 and 2009, I took 27 specimens from seven sites within six hectads in north Kent. All were swept from *Phragmites australis* during casual entomological recording. The identification was derived from Shaw & Huddleston (1991) and Shaw & Quicke (1999). Gavin Broad confirmed this following the donation of three females and five males to the Natural History Museum, London in July 2009. The data are 5 July 2008, Lower Halstow Brickworks, O.S. grid reference TQ 858676, one male; 5 July 2009, Pegwell Bay old hoverport, TR 34906395, one male and TR 350641 one male, one female; 12 July 2009, Stodmarsh NNR, TR2362, 11 males, seven females and TR 2363 one female; 15 August 2009, Higham Canal, TQ7073, one female; 17 August 2009, Cleve Marshes, TR 0464 one female; 17 August 2009, Graveney Marshes, TR 0564, one male; 18 August 2009,Teynham Levels, TQ 9765, one male. While the Higham Canal site is very close to where Malcolm Jennings collected the *Lipara* galls there has clearly been a dramatic increase in the local range of the species during the past four years commensurate with the increase in range of the host.

Association with *Lipara rufitarsis*

Collin (1946) had specimens of *Lipara rufitarsis* 'bred by Dr. K.G. Blair from galls collected on the coast of Devon, and in June 1943 I caught a female at Chippenham Fen (Cambs.)'. Falk (1991) gave the status as Notable, that is, estimated to occur within the range of sixteen to one hundred modern 10-km squares and it has been recorded in Berkshire, Cambridgeshire, Cornwall, Devon, Dorset, Hampshire, Huntingdonshire, Kent, Oxfordshire, Suffolk, Surrey and Warwickshire (J. W. Ismay, *pers. comm.*). The fly was, apparently, unrecorded from Kent until 2000 but, mainly from the fieldwork of Malcolm Jennings, is now known to be widespread. The Kent distribution of *Lipara rufitarsis* and *Baryproctus barypus*, plotted on a 1km grid square basis, is shown in Fig. 1.

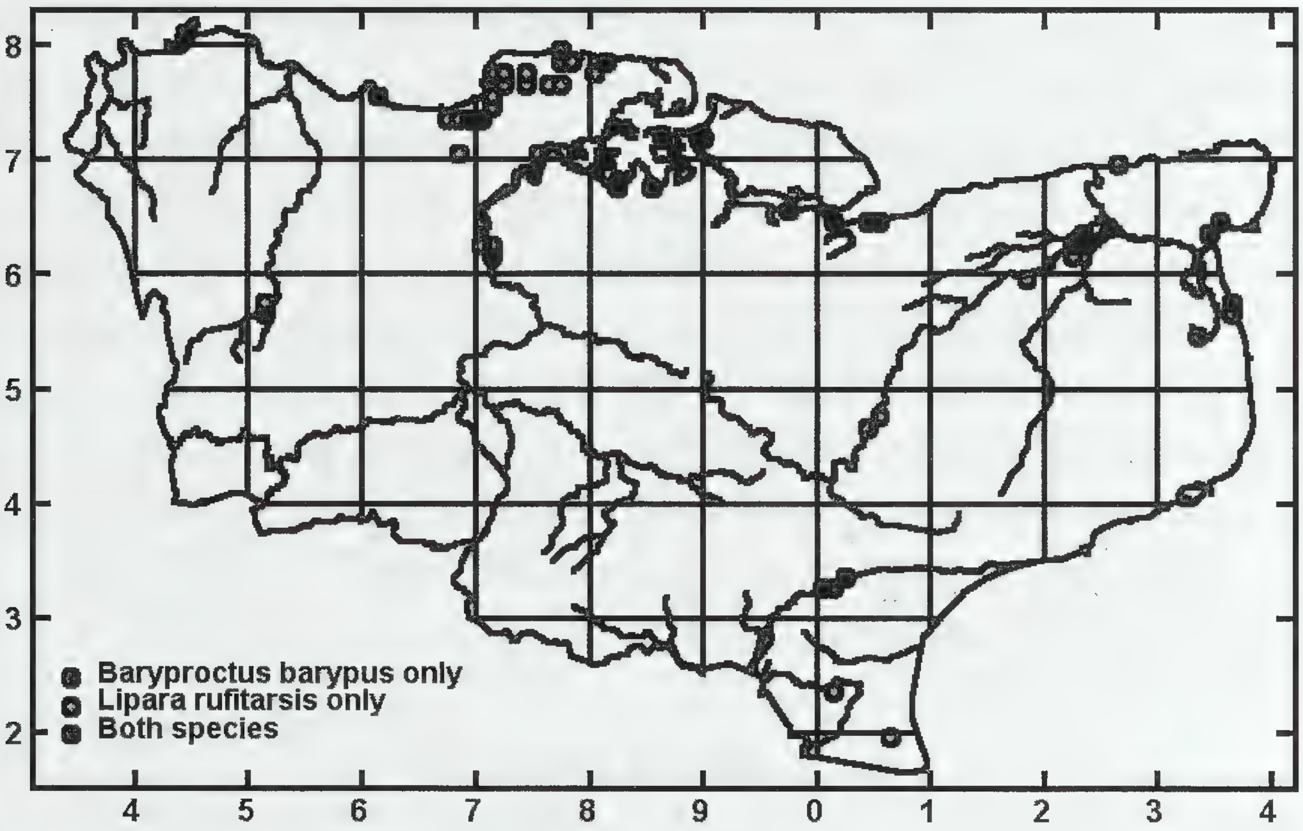

Figure 1. Known distribution of *Lipara rufitarsis* and *Baryproctus barypus* in Watsonian Kent.

Variation

In the keys by Marshall (1885) and Shaw & Quicke (1999) emphasis is placed on the dilated apical tarsomere. This, however, is peculiar to females with males having more slender telotarsi and pointed, not bevelled, claws – a character overlooked in the description by Shaw (1994).

Marshall's English description of the type, on page 47, was 'Deep black, shining; mandibles, abdomen in the middle, and legs, rufo-testaceous; palpi and hind coxae above at the base, fuscous; last joint of all the tarsi, especially of the hind pair, incrassated, black. Wings fuscescent, nervures and stigma fuscous, the latter testaceous at both ends. Terebra scarcely longer than 1/3 of the abdomen; valves stout, pilose, truncate. Female. Length 1½; wings, 3¼ lin.'. In the descriptions of earlier entomologists one line 'lin' equated to one-twelth of an inch. He then dealt more fully with the coloration stating '...clypeus and mandibles testaceous, the latter tipped with black. Abdomen… segment 1… lateral margins not membranaceous, black; 2,3, and base of 4, rufo-testaceous, 2 with a fuscous spot at the base. Hind coxae with a large fuscous basal spot above; the rest of the short, stout legs rufo-testaceous, except the last joint of the tarsi, which, together with the claws, is black, pale at the base. Wings narrow, fuscescent, squamulae, nervures, and middle of the pale stigma, fuscous; stigma surrounded by a sub-testaceous spot: 1st abscissa of the radius clouded with fuscous'.

Shaw (1994) stated "… predominantly blackish, with the following parts orange: vertical orbit, cheek and much of mouth, central part of gaster, legs (except bases of all coxae, all claws, and at least the apical halves of mid and hind telotarsi), and shaft of ovipositor except its apex".

Figures 2 and 3 are composite diagrams, based on eleven males and eight females, showing the maximum and minimum extent of orange on the thorax and abdomen.

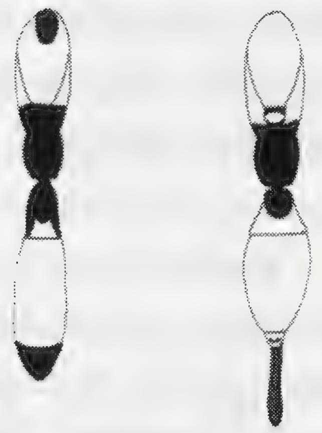

Figure 2. Composite diagram showing maximum extent of orange (Male, left, female, right).

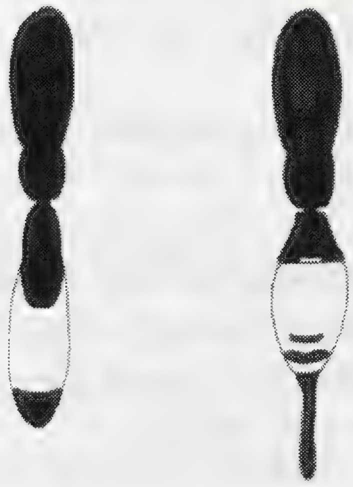

Figure 3. Composite diagram showing minimum extent of orange, (Male, left, female, right).

While Marshall stated that the antennae of the type specimen has 37 segments, Shaw (1994) stated 'The two females seen each have 45 antennal segments, the males have 43-45'. Further variation, based on nineteen Kent specimens, is shown in Table 1.

	Male (n = 11)	Female (n = 8)
Number of flagellar segments	42 – 47 (mean 45)	46 – 51 (mean 48)
Forewing length	3.5 – 5.1 (mean 4.4, SD 0.5)	4.5 – 5.4 (mean 5.2, SD 0.3)
Body length from front of pronotum to apex of abdomen (excluding female ovipositor)	3.0 – 5.3 (mean 4.2, SD 0.6)	4.5 – 5.5 (mean 4.7, SD 0.3)

Table 1. Variation in number of flagellar segments, forewing and body length from Kent specimens.

Acknowledgements

The distribution map was produced using DMAP for Windows version 6.5f, a computer program developed by Dr Alan Morton, with a digitised boundary created by Laurence Clemons and David Mitchell.

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Pseudatemelia flavifrontella (D. & S.) (Lep.: Oecophoridae) new to Huntingdonshire, VC 31

Until the closure of the Centre for Ecology and Hydrology (CEH) at Monks Wood at the end of January 2009, the Rothamsted Insect Survey had operated a light trap, known as Ewingswode (site 277: O. S. grid reference TL 200797), at the site for over 30 years. This diverse site produced a very large long-term collection of data that will remain extremely valuable for many years to come. Despite having trapped here for many years, stored samples of micro-moths are still providing new specimens of interest.

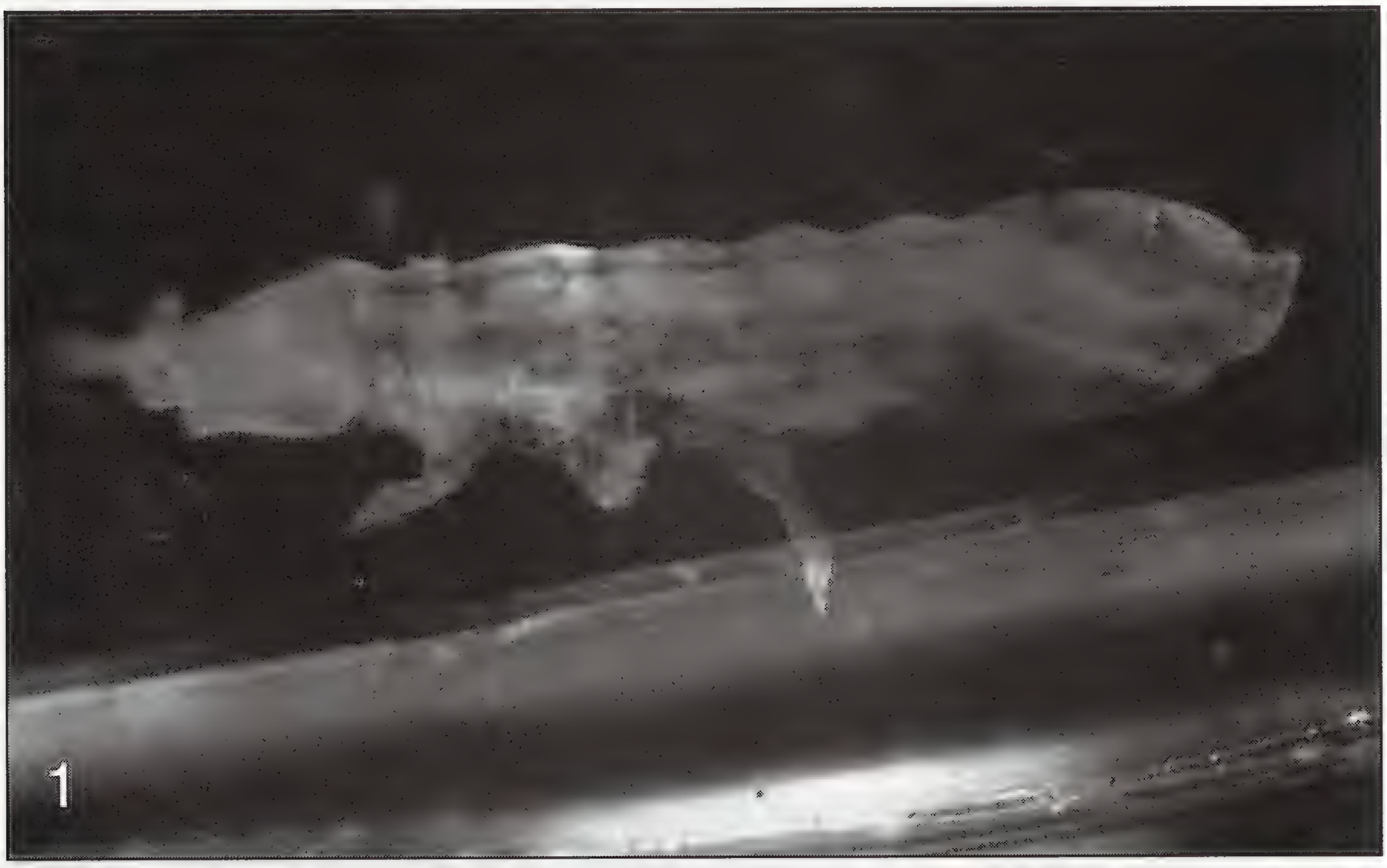
Recent examination of catches taken in 2008 found that a single *Pseudatemelia flavifrontella* was caught on the night of 30/31 May, and was the first to be recorded from Huntingdonshire (VC 31). The specimen was identified, from its genitalia, by Kevin Royles and was confirmed by Barry Dickerson.

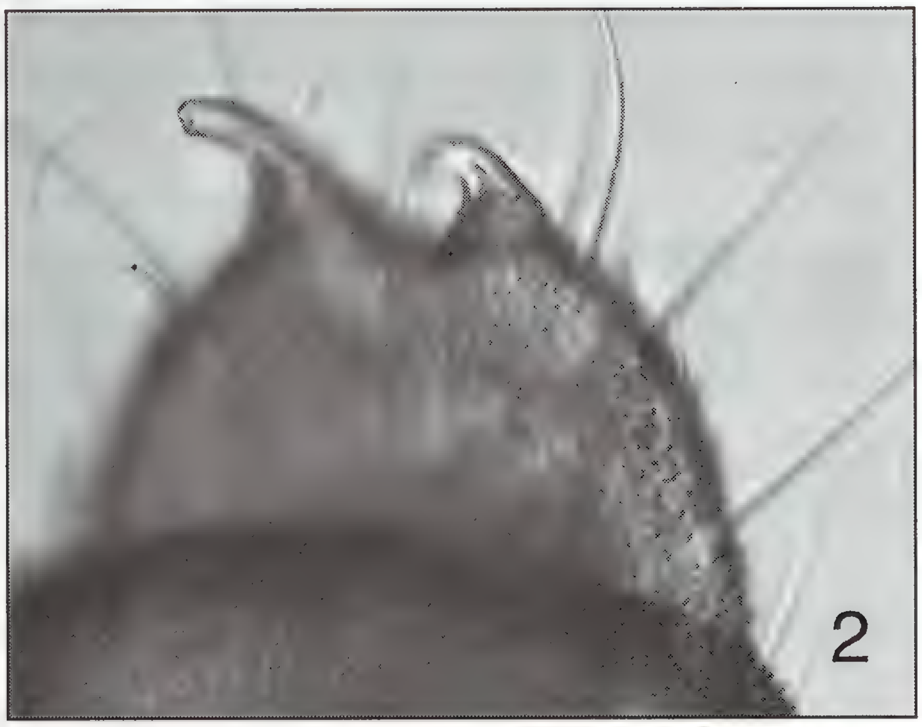
Pseudatemelia flavifrontella is on the wing from late May into July. The species has a wingspan of approximately 20mm and, as its name implies, it has a yellow-orange head, whilst the rest of the moth is pale brown. It is a scarce species that occurs locally in woodlands in southern England, from where distribution extends only as far north as Staffordshire and Nottinghamshire. In Wales it has been recorded from Monmouthshire, Merionethshire and Caernarvonshire (Emmet & Langmaid, 2002. *The Moths & Butterflies of Great Britain & Ireland* **4(1)**. Harley Books).

Many thanks to Kevin Royles for his hard work trawling through the stored samples; and to Barry Dickerson for alerting me to the importance of this find in VC31. Thanks should also go to Nick Greatorex-Davies for operating the trap at the time that this moth was caught.— PHILIP J. L. GOULD, Co-ordinator of the Rothamsted Insect Survey Light-trap Network, Plant & Invertebrate Ecology Department, Rothamsted Research, Harpenden, Hertfordshire AL5 2JQ (E-mail: phil.gould@bbsrc.ac.uk).

Hymenaphorura nova Pomorski, 1990 (Collembola: Onychiuridae) in the hyporheos of a karstic river: a new species and genus for the UK in a novel habitat

Hymenaphorura is a genus of Collembola within the Onychiuridae, a family of blind, soil-dwelling springtails characterised by epidermal organs (the pseudocelli) that secrete noxious protective chemicals. Although reliance on pseudocelli for taxonomic purposes is questionable (Hopkin, 1997. *Key to UK Springtails*. Field Studies Council), the genus *Hymenaphorura* is distinctive and unique in lacking pseudocelli at the back of the head (Pomorski, 1998. *Onychiurinae of Poland (Collembola: Onychiuridae)*. Polish taxonomical society; Fjellberg, 1998. The Collembola of Fennoscandinavia and Denmark. *Fauna*





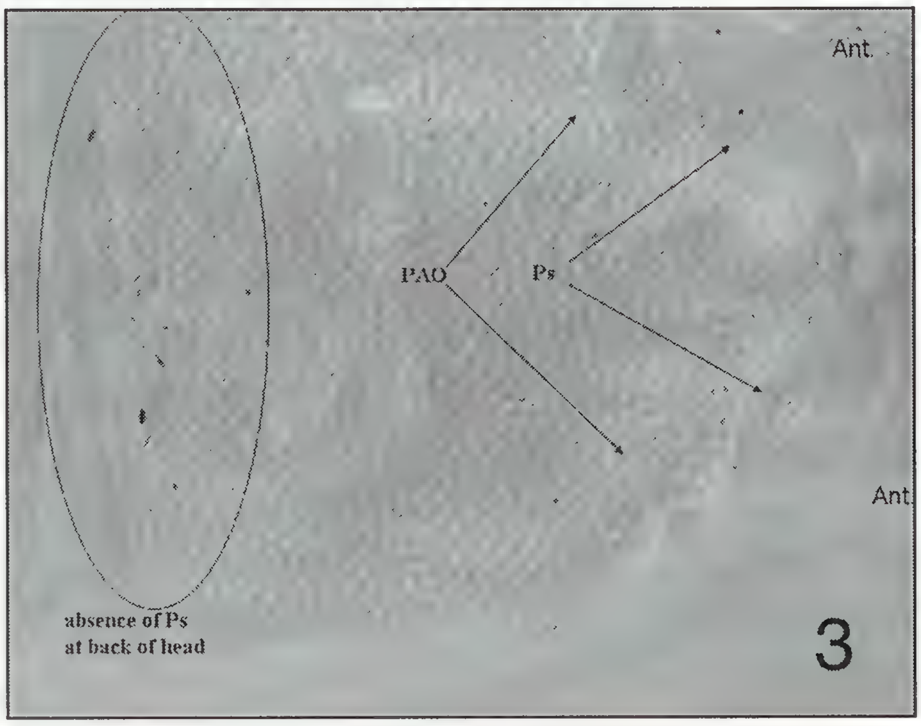


Plate 29. *Hymenaphorura nova* from Skirfare, Yorkshire, **1.** General habitus. The lines underneath are 1mm apart. Note the final abdominal segment (6) is clearly narrowed compared to 5; **2.** The translucent anal spines. x 2400; **3.** top of head (body to left of image, antennae to right); note the single pseudocellus beow each antenna, and the absence of pseudocelli at the back of the head. x2400. Abbreviations: ant. – antenna base; Ps – Pseudocelli; PAO Post-Antennal Organ

Entomological Scandinavica **35**. Brill), and has not been recorded in the UK previously.

During PhD work on the hyporheos (the fauna of the hyporheic zone – the saturated zone under a river bed) of the river Skirfare in the karst limestone area of Yorkshire (O.S. grid reference SD 923724) in November 2009, multiple separate specimens of an onychiurid collembolan were collected from gravel in the river bed by insertion of defaunated mesh bags of gravel 30 centimetres deep into the river bed. These were collected after four weeks and the entire sample preserved in alcohol. We have used the same procedure in other UK sites without any evidence of contamination by ground-dwelling arthropods. Multiple specimens of this species were collected under every riffle studied.

The Collembola were c. 1 mm long (large for hyporheic species) with prominent translucent-brown anal spines (1.7 × claw length, compared to 1.5 × claw length for *Protaphorura armata*). Using Hopkin (2007) they did not key out satisfactorily. Following advice from A. Fjellberg, keying these animals with Pomorski (1998, *op. cit.*) identified them as *Hymenaphora nova*, differing from the description only in the absence of a denticle within the claw (a variable character). This is a new genus as well as a new species to the UK, and is remarkable for its hyporheic habitat. *Hymenaphora nova* was only described in 1990 (Pomorski, 1990. New data on the genus Hymenaphorura (Collembola, Onychiuridae) from Europe. *Mitteilungen der Schweitzerischen Entomologischen Gesellschaft*, **63**: 209-225) and has previously been reported in saturated soils by rivers and flooded mines. It is not listed in Fjellberg (1998. *op. cit.*), but has been reported from river beds in Poland. This suggests that it is unusual among UK Collembola in being exclusively confined to groundwater habitats, and so is a groundwater stygobite *sensu* Gibert et al (1994. *Basic attributes of groundwater ecosystems and prospects for research.* In Gibert, J., Danielopol d.l. & Stanford J.A. (Ed.) *Groundwater Ecology*. Academic Press). Other aquatic UK Collembola such as inter-tidal species (eg *Anurida maritima*), or the isotomid *Agrenia bidenticulata* that lives under stones in upland streams experience temporary exposure to air (Hopkin, 2007), but these species are both hydrophobic (unwettable). The only Collembolan yet proven to be truly submersible is *Cryptopygus clavatus* (formerly *Proisotoma admaritma*) which is fully wettable and lives permanently under water in rock pools, but can be cultured in tap water (A. Fjellberg, pers. comm.). We plan to capture live *Hymenaphorura* to explore their hydophobicity in culture.

This project was funded by NERC CASE studentship NE/F009518/1 collaboratively with the Environment agency. Arne Fjellberg provided the initial identification.— P. J. A. Shaw, M. Dunscombe & A. Robertson, Department of Life Sciences, Roehampton University, Whitelands College, Holybourne Avenue, London SW15 4JD (E-mail: P. Shaw@roehampton.ac.uk).

Turning disaster to advantage: *Phryxe vulgaris* (Fall.) (Dip.: Tachinidae) reared from larva of the Lappet moth *Gastropacha quercifolia* (L.) (Lep.: Lasiocampidae) – apparently a new host record

I was delighted to encounter a fully fed caterpillar of a Lappet moth crawling across the sheet under one of my moth traps at Wicken Fen, Cambridgeshire, on 28 June 2009; although it is well-known as a resident of Wicken it is nevertheless a scarce moth these days. It was duly gathered up and provided with some foodplant, but within 24 hours had spun a cocoon to one side of the top of a vertical stem within the coffee jar that was now its home. I must confess to a degree of disappointment when a hairy, black fly was spotted flying around inside the jar a couple of weeks later. Using the key by Belshaw (1993. Tachinid flies. Diptera: Tachinidae. *Handbooks for the Identification of British Insects* **10** Part 4a(i). Royal Entomological Society) this ran very easily to genus *Phryxe* and then by the genitalia to *P. vulgaris*.

The silken cocoon was apparently completed by the caterpillar by the evening of 30 June (I say *apparently* because I could not tell if it was still finishing the inner surface) and the fly emerged on 13 July. Over the next 24 hours, three more flies emerged within the coffee jar; all four were male. After a three day gap, five more adult flies emerged, on 17 July – one male and four females. This provides some tentative evidence that males may emerge a few days before females in this parasitic species (on the basis that all the flies were probably the same age because they were *probably* laid by a single female at a single session (though my use of two 'probablys' and a sample of less than ten may induce apoplexy in any statisticians reading this).

On 19 July, the silk cocoon was opened along its longitudinal axis to reveal that the moth larva, resting head upwards, had failed to pupate. The upper half of the larva, though darkened by decay, was more or less structurally intact, both externally and internally, whilst the lower (distal) end of the abdomen had more or less liquefied. Minute white mites were moving about the external surface of the anterior end of the larva.

Dissection of the larva failed to reveal the presence of any fly puparia; these were subsequently found by searching through the compost in the jar. A single unhatched cocoon was also discovered. However, whilst this demonstrates clearly that the fly larvae must have left the host to pupate I cannot say whether they did this prior to the caterpillar spinning its cocoon or whether they emerged from the completed cocoon later. The only possible exit from the cocoon would have been via the opening left in the upper end by the moth larva.

Belshaw (*op. cit.*) lists a number of hosts for *Phryxe vulgaris* – all Lepidoptera apart from a single sawfly. He states that about half the British host records relate to the Pieridae and Nymphalidae combined; amongst the 14 butterflies and 27 moths given as hosts, *Gastropacha quercifolia* does not feature. This moth is not listed as a host for any tachinid species on the Tachinid Recording Scheme website (*http://tachinidae.org.uk*) and so this 'disaster' has turned to advantage in the provision of a new host record.— Colin W. Plant, 14 West Road, Bishops Stortford, Hertfordshire CM23 3QP (E-mail: cpauk1@ntlworld.com).

A further occurrence of the antlion *Euroleon nostras* (Geoffr. in Fourcroy) (Neu.: Myrmeleontidae) in Norfolk

I was interested to read of the discovery of the antlion *Euroleon nostras* in Essex (Bowdrey & Atkins, *Antea* 143). On 19 July 2010, an antlion was observed by IM on a wall close to his actinic moth trap, about 500 metres inland from the coastal sand dunes at the northern end of Great Yarmouth, East Norfolk. Several photographs were taken of the insect and later brought to DH who identified the insect as *Euroleon nostras*. The photographs were passed to Colin Plant who confirmed the identification, noting that it was a female.

This striking insect is a well-known resident in the Minsmere area of East Suffolk and also occurs sparingly at a few other stations on the Suffolk coast and inland on the Suffolk Sandlings. More recently it was discovered at Wells-next-the-Sea on the north coast of Norfolk (Northfield, 2006. *Ent. Rec.* **118**: 229 - 230).

Our thanks to Colin Plant for confirming the identification.— IAN MILLS, 80 Hamilton Road, Great Yarmouth, Norfolk NR30 4LZ & DAVE HIPPERSON, Summerfield House, Main Road, Filby, Great Yarmouth, Norfolk NR29 3HN.

The status of the Olive Crescent *Trisateles emortualis* (D. & S.) (Lep.: Noctuidae) and the Many-lined, *Costaconvexa polygrammata* Borkh. (Lep.: Geometridae) on the Channel Islands

A Rothamsted Insect Survey (RIS) light-trap has been operating at Howard Davis Farm at Trinity on Jersey (RIS site number 547) since 1969, thus providing a very large and invaluable long-term data set. Given the site's proximity to France it is not surprising that it often turns up migrants or vagrants from Europe that would be considered very uncommon on the British mainland. And even though it has been in operation for such a long time, the trap still produces records of particular interest for the Channel Islands as a whole.

On the night of 2/3 July 2009 the trap caught a single Olive Crescent *Trisateles emortualis* (D. & S.). This is only the second record for the island, with the previous specimen taken by Roger Long at St. Ouen on 9 September 2007. This is also only the third record for the Channel Islands as a whole, as a singleton found by Tim Peet on 22 July 1984 at Le Chêne, Guernsey, remains the only other record (R. Austin, pers. comm.).

In Britain *T. emortualis* is a *Red Data Book* species with populations found in only two woods in North Essex and in a small group of woodlands in the Chilterns, Buckinghamshire (Waring, P., Townsend, M. & Lewington, R. 2003. *Field Guide to the Moths of Great Britain & Ireland*. British Wildlife Publishing). Other records have come from its uncommon incidence as a migrant. Elsewhere it is a very widespread species, with a distribution spreading across the whole of Eurasia. In Western Europe it is found in northern Spain, widely in France, infrequently in Belgium and the Netherlands, and commonly in Denmark (Heath & Emmet, 1983. *The Moths & Butterflies of Great Britain & Ireland* **10**. Harley Books).

The Many-lined *Costaconvexa polygrammata* Borkh. also has few records on Jersey. The Rothamsted trap caught the first for the island on 28 August 1984, but it took another 15 years for the second to be found at St. John on 1 July 1999. The following year, one was discovered at St. Catherine (25 August); and in 2004, two were recorded at Grouville on 2 August. In 2006, a year widely regarded as good for migrants, five were found in June, with four from Grouville and one at Les Augrès. Five were also recorded the following year, where three turned up in June at St. Ouen and two were noted at Grouville in August. It is possible that *C. polygrammata* is a transitory resident on Jersey (R. Long, *pers. comm.*), as shown by the fact that the only one to have appeared since these two good years was that caught in the Rothamsted trap on 21/22 September 2009. On Guernsey there are only four records, all from 2002 which, interestingly, was a year where none were found elsewhere on the Islands. One was found by Tim Peet at Le Chêne on 14 September, singletons were recorded by Mark Lawson on 10 and 15 July at Les Effards, and one at La Broderie was found by Peter Costen on 30 June (R. Austin, *pers. comm.*). There have been more records on Alderney, where perhaps being the closest to France has played a part. David Wedd found one in 2005 and then in the following year over 40 were recorded. As mentioned, 2006 was good for migrants and the high count of *C. polygrammata* on Alderney was mirrored by 25 recorded on the British mainland (Waring *et al*, *loc. cit.*), the most ever recorded in a single year. At the time it was considered that the species may be resident on the island, but only one was subsequently found in 2007, and none have been seen since (D. Wedd, *pers. comm.*).

C. polygrammata used to be found at Burwell and Wicken Fens in Cambridgeshire and at some damp meadows near Bristol but became extinct as a breeding resident in Britain in the late 19th century (Waring *et al*, *loc. cit.*). This was probably due to habitat loss when so many suitable wet areas were drained for agriculture, although as it feeds on relatively common plants (various species of Bedstraw, *Galium* spp.) it is perhaps surprising that it did not manage to retain a foothold somewhere in the UK. Abroad the species occurs widely across Europe.

Many thanks to Roger Long for help regarding Jersey records; to Rich Austin for records on Guernsey; and to David Wedd for Alderney information and comments. And thanks to Alex Vautier for her hard work operating the trap.—PHILIP J. L. GOULD, Co-ordinator of the Rothamsted Insect Survey Light-trap Network, Plant & Invertebrate Ecology Department, Rothamsted Research, Harpenden, Hertfordshire AL5 2JQ (E-mail: phil.gould@bbsrc.ac.uk).

TWO NEW SPECIES OF NOCTUIDAE (LEPIDOPTERA), SUBFAMILIES HYPENODINAE AND HYPENINAE, FROM FIJI

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Abstract

A collection of moths from Fiji from the period 1991 – 1998 has revealed two previously undescribed species of Noctuidae which are described here as *Fealathina angustivalva* sp.n. and *Hypena rubrescens* sp.n.

Keywords: Noctuidae, Hypeninae, Hypenodinae, Fiji, New species.

Introduction

The major work on the Lepidoptera of Fiji is that of Robinson (1975), but this faunistic area has also been referred to more recently by Holloway in his series the Moths of Borneo (1983 to present).

Family: Noctuidae

Genus: *Fealathina* Holloway, 2008, *Moths of Borneo, Part 17*: 222-223.
Holloway (p 216) placed this genus close to *Trigonostis* Meyrick and due to the absence of ocelli in both he placed the genus in the Hypenodinae, reversing the synonymy which placed this sub-family in the Strepsimaninae (Kitching and Rawlins, 1998: 372).

***Fealathina angustivalva* sp. n.**

Male: (Plate 30, 1) Wingspan 11-15 mm. Head, thorax, palps and antennae pale buff, with abdomen slightly darker. Ocelli absent. Labial palps directed forward, about four times the length of the head, with the second segment contributing most of this length. Antennae (Figure 1a) bipectinate, rami plumose. Forewings broadly triangular, slightly falcate with costa bowed at four fifths; pale buff irrorated with darker buff; a number of small brown marks on costa, most noticeably near one quarter, one half, four fifths and close to the apex; broad brown medial fascia, running from costa at three quarters to dorsum at one half, darkest and most clearly delineated dorsally, becoming paler and less distinct towards costa; reniform stigma included in outer half of fascia, pale with a central dark brown dot; another similar dot on outer edge of fascia, midway between reniform and costa; dorsal quarter of medial fascia delineated by four similar dots; orbicular stigma indistinct; sub-terminal fascia brown, narrower and less distinct than medial; a series of seven clearly marked dark brown marginal dots. Hindwings pale buff.

Genitalia: Simple. valves simple and very narrow, ten times as long as broad; aedeagus with six linear cornuti arranged in three pairs.

Female: Wingspan 15mm. A single worn example is known, with abdomen missing. Body and wings as male, with antennae simple.

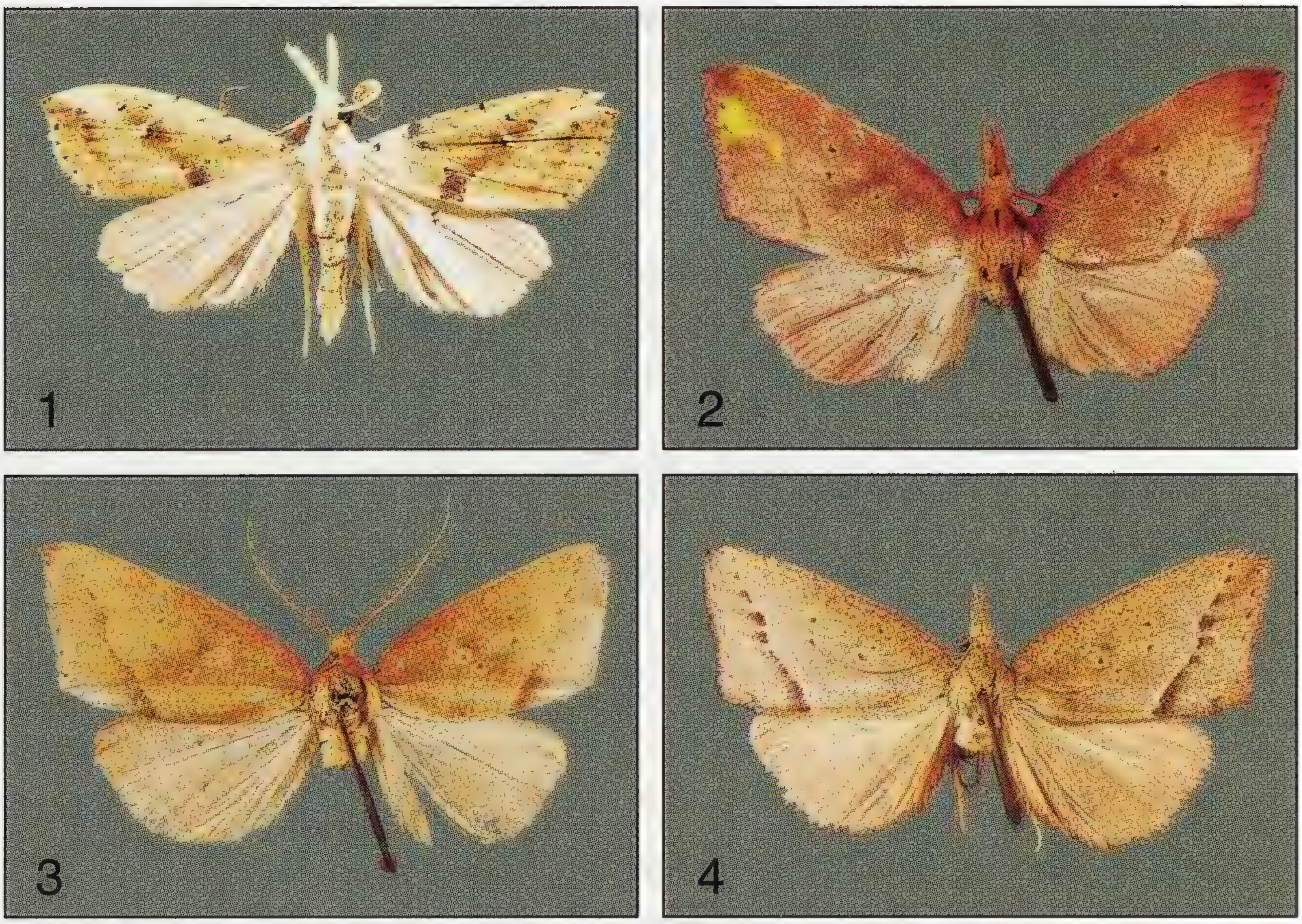

Plate 30. New species of Noctuidae from Fiji. 1. *Fealathina angustivalva* sp.n. Holotype male; 2. *Hypena rubrescens* sp.n. Holotype male; 3. *Hypena rubrescens* sp.n. Paratype male – palps missing; 4. *Hypena rubrescens* sp.n. Paratype female.

Taxonomy: The Hypeninae and Hypenodinae represent an area in need of revision on a world-wide basis. In the absence of this, the classification adopted by Holloway (2008) is followed here. The current species is placed in the Hypenodinae based on the absence of ocelli. It matches all the characteristics described as being common to *Fealathina* and the closest alternative genus *Trigonostis*. Specifically, it is placed in *Fealathina* based on the following. The forewings are deeper and more triangular than *Trigonostis* spp. The male genitalia provide the clearest characters, with the long, slender uncus downcurved over the basal half, and the long, slender, tongue-like valves extending well beyond the uncus. The characters described in the forewing faciae are however somewhat ambiguous, and the male hindwings lack the hair pencils along the dorsum described for *Fealathina*.

Diagnosis: The other three described species in the genus (Holloway 2008, 222-225) are very similar. *F. angustivalva* is perhaps closest to *F. caudata,* from which it can be distinguished by its larger size and more complete medial fascia. The very narrow valves are also diagnostic. *F. angustivalva* is consistent with the species described by Robinson (1975: 240) as Indeterminate Species C (Hypeninae).

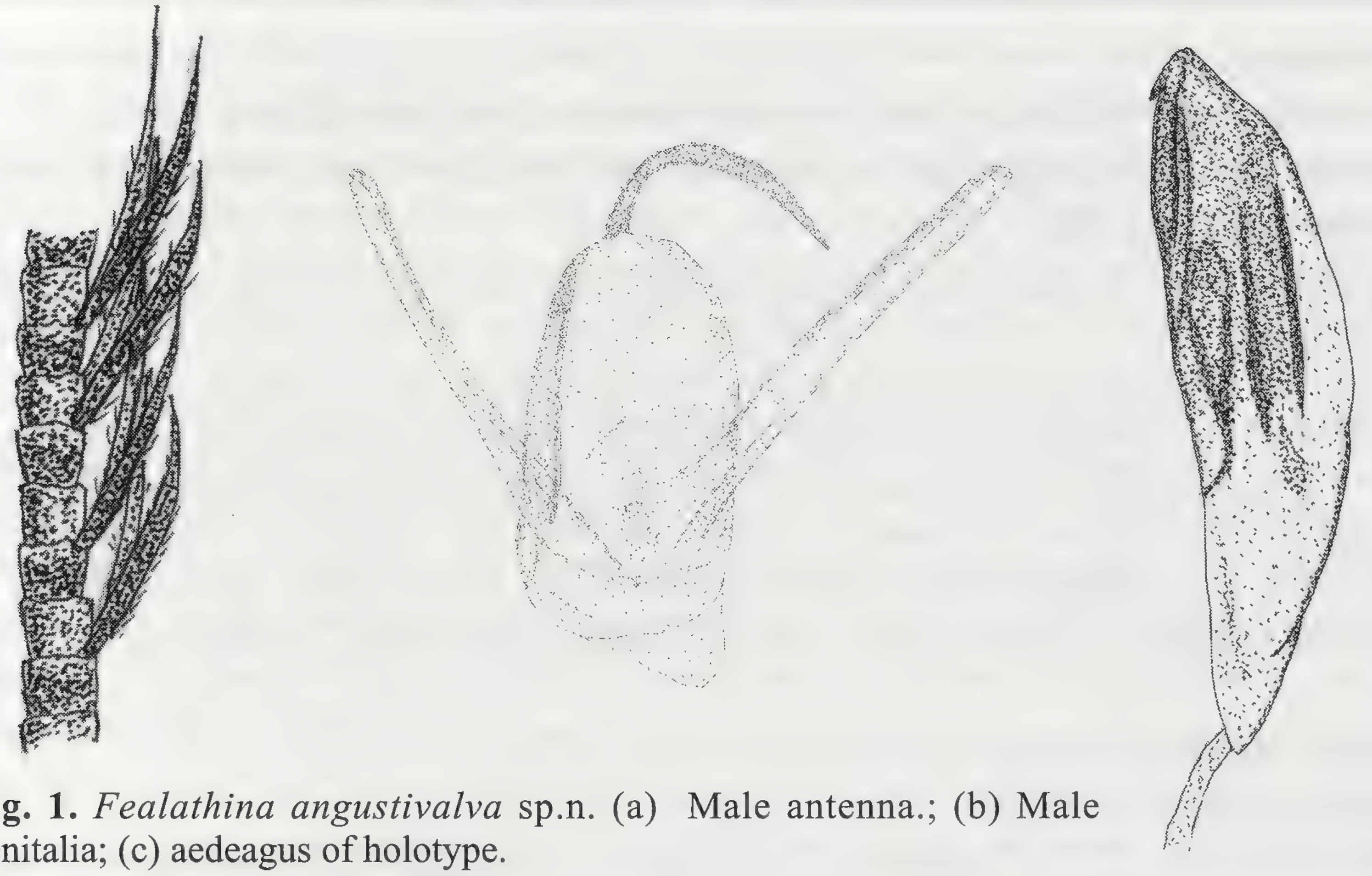

Fig. 1. *Fealathina angustivalva* sp.n. (a) Male antenna.; (b) Male genitalia; (c) aedeagus of holotype.

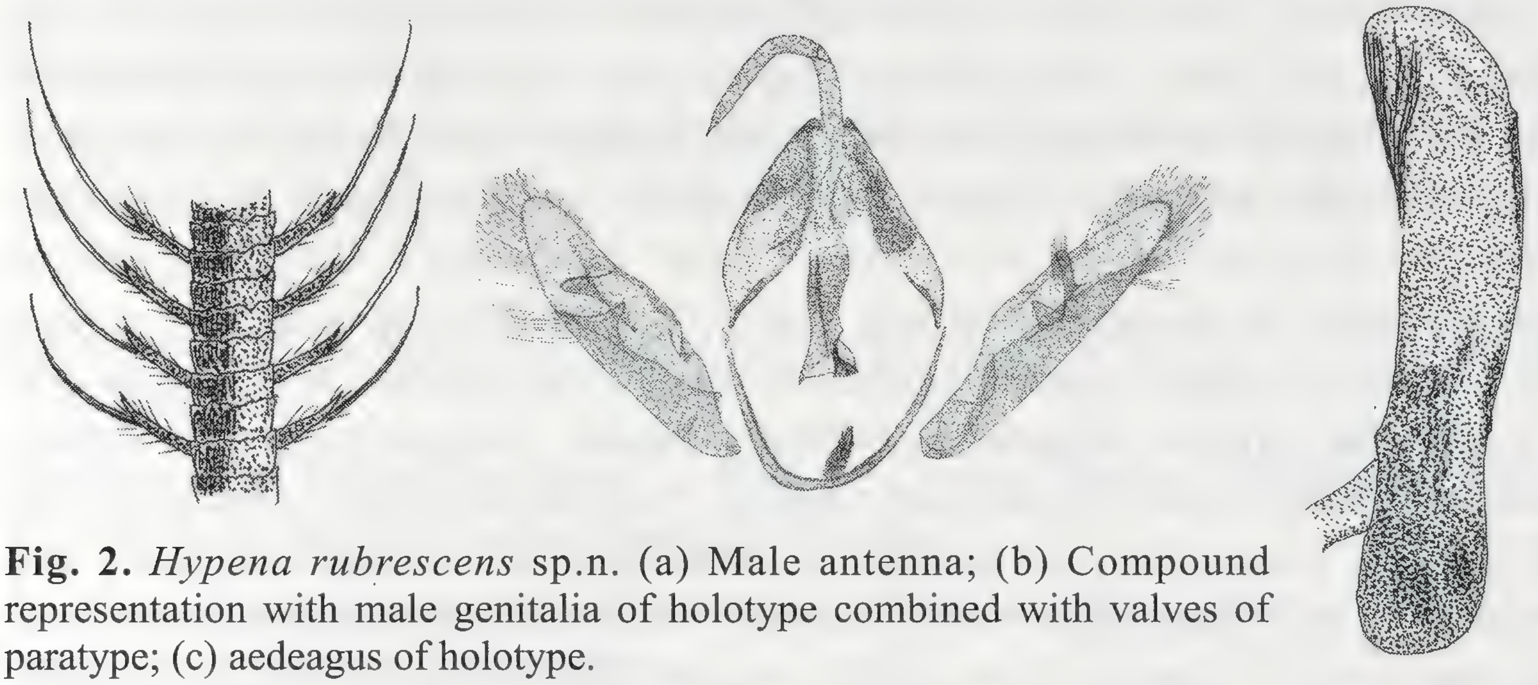

Fig. 2. *Hypena rubrescens* sp.n. (a) Male antenna; (b) Compound representation with male genitalia of holotype combined with valves of paratype; (c) aedeagus of holotype.

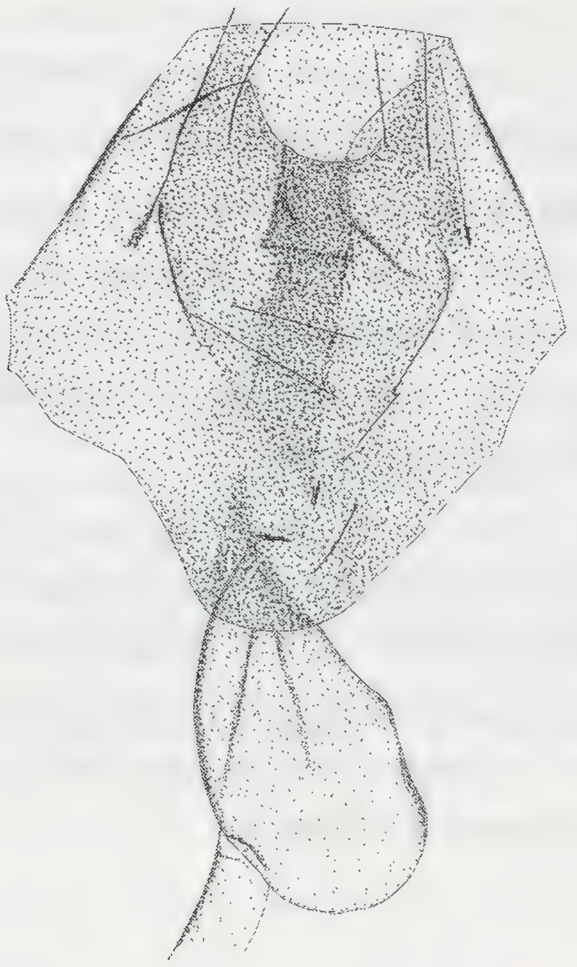

Fig. 3. *Hypena rubrescens* sp.n. Female genitalia.

Etymology:

The name *angustivalva* reflects the very narrow valves in the male genitalia.

Distribution: Ten males and one female from a range of rain forest locations in Eastern Viti Levu, Fiji.

Holotype: ♂ FIJI, Viti Levu, Monasavu, grid ref. N27/2121, 18.ii.1998, at light, *J.A.Clayton.*

Paratypes: ♀ FIJI, Viti Levu, Namosi Highlands, grid ref. N29/4075. 29.iii.1997, ♂ Monasavu, grid ref. N27/2121, 5.iv.2005, 2 ♂ Galoa Plantation, grid ref. N29/1867, 7.v.1994, 3 ♂ Namosi Highlands, grid ref. N29/4075, 29,iii,1997, 26.xi.1997 and 31.i.1998, 2 ♂ Savura Creek, grid ref. O28/6781, 13.xii.1991 and 22.v.1992, ♂ Nukurua Plantation, grid ref. O28/7397 19.iii.1994, all at light, *J.A.Clayton.*

Genus: *Hypena* Schrank, 1882, *Fauna Boica 2(2):163*

***Hypena rubrescens* sp. n.**

Male: (Plate 30, 2, 3) Wingspan 27-28 mm. Two examples are known, one with the palps missing. Head, thorax, palps and antennae reddish buff to brick red, with abdomen slightly paler. Ocelli present. Labial palps directed forward, about three times the length of the head, with the second segment contributing two thirds of the total length. Antennae (Figure 2a) modified pectinate; basal third of rami robust and plumose, distal two thirds slender and simple, the distal section emerging from the basal section just before the end, leaving a distinct pointed spur. Forewings broad; costa distinctly bowed at one quarter, and less so near apex, straight between; termen distinctively shaped, straight with apex slightly falcate and tornus distinctly angular, slightly projected distally; uniform reddish buff to brick red, slightly darker basally; reniform and orbicular stigmata each consisting of two small black dots; dark brown sub-terminal fascia running from costa near apex to dorsum at two thirds, sharply defined basally but more diffuse distally, continuous for dorsal third, becoming broken and progressively fainter towards costa; a row of small dark brown marginal dots. Hindwings plain, reflecting colour of forewings, but paler.

Genitalia. Figs 2b, 2c. As the extracted genitalia of neither the holotype nor paratype show the full structure to best effect, a composite drawing is shown. Valves tongue-shaped with two lightly-sclerotised processes, one digital and one sub-triangular; uncus long and slender, and strongly curved downwards; aedeagus with three slender cornuti.

Female: (Plate 30, 4) Wingspan 29 mm. Antennae simple. Wings similarly marked to the male. In the single example known the sub-terminal fascia is somewhat more strongly marked than in the male. Both wings are buff coloured, with less of a reddish suffusion, and the hindwing is not significantly paler.

Figure 3 shows the (incomplete) genitalia of the single female. There are no strong diagnostic features.

Taxonomy: *H. rubrescens* is placed in the Hypeninae based on the presence of ocelli. Following the classification adopted by Holloway (2008) it is difficult to place the present species definitively in any of the described Hypenine genera. Specifically the unusual forewing shape and the form of the processes on the valves in the male genitalia coupled with the shape on the uncus make it difficult to place. It is here placed in *Hypena* to which it appears to have the greatest affinity, due in part to the great diversity which this large genus demonstrates. It may be that in due course a new genus will be required, but it is concluded that this consideration should form part of a future full revision of the Hypeninae.

Diagnosis: Even based on the taxonomic placement described above it is difficult to identify the nearest relative of *H. rubrescens.* However, the forewing shape and fasciae, together with the reddish colouration in the male, are diagnostic, as are the processes on the valves coupled with the form of the uncus in the male genitalia. The markings of the present species are reminiscent of *H. fijiensis* Robinson, but the wing shape differs considerably. It is consistent with the species described by Robinson (1975: 239) as Indeterminate Species B (Hypeninae).

Etymology:
The name *rubrescens* reflects the overall reddish colouration of the species.

Distribution: Two males and one female from two rain forest locations in Eastern Viti Levu, Fiji.

Holotype: ♂ FIJI, Viti Levu, Savura Creek, grid ref. O28/6781, 6.iii.1992, at light, *J.A.Clayton.*

Paratypes: ♂ data as holotype, ♀ FIJI, Viti Levu, Namosi Highlands, grid ref. N29/4075. 26.ix.1997, both at light, *J.A.Clayton.*

All types and genitalia slides of both species have been deposited in the National Museums of Scotland, Edinburgh.

Acknowledgements

I would like to thank Dr K.P. Bland of the National Museums of Scotland for helpful discussions and advice, and for arranging access to the entomological collections and other facilities at the Museum.

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Kitching, I. J. & Rawlins, J. E., 1998. *The Noctuoidea.* In: Kristensen, N. P.(Ed.), Lepidoptera, Moths and Butterflies, Volume 1: Evolution, Systematics, and Biogeography. *Handbook of Zoology.* **4.** part 35: 355-401.

Robinson, G. S., 1975. *The Macrolepidoptera of Fiji and Rotuma – a Taxonomic and Geographic Study.* Classey, Oxford.

Ethmia quadrillella Goeze (Lep.: Ethmiidae) on the Channel Islands – a correction

In a previous note regarding records from the Rothamsted Insect Survey light-trap at St. Martin's on Guernsey (*Ent. Rec.* **122**. 28-29) I stated that a singleton of *Ethmia quadrillella* caught on the night of 30/31 July 2008 was a first for the Channel Islands. In fact, there have been four records from Jersey: David Wedd found one at Grouville Common on 8 August 1998 and Roger Long also found one there on 19 July 2006. Since then he has found the species again at Waterworks Valley on 26 July 2006 and at Mont au Prêtre on 28 July 2009 (R. Long, *pers. comm.*).

The Guernsey specimen remains an important record, however, as it is the first for the island. In my original note I did suggest that this moth may have originated from a small undiscovered local colony, but perhaps this population may now be found on Jersey instead.

Many thanks to Roger Long for alerting me to my error and for additional details. And thanks to Rich Austin for original information regarding the specimen and for identifying the Rothamsted catches. I am also indebted to Terry Brokenshire at Raymond Falla House for his continued hard work operating the trap.— PHILIP J. L. GOULD, Co-ordinator of the Rothamsted Insect Survey Light-trap Network, Plant & Invertebrate Ecology Department, Rothamsted Research, Harpenden, Hertfordshire AL5 2JQ (E-mail: phil.gould@bbsrc.ac.uk).

Xestia trifida (Fischer von Waldheim, 1820) (Lep.: Noctuidae): first report for Bulgaria, with some additional faunistic records

On 27 September 2008, RR collected two male specimens of *Xestia trifida* (Fischer von Waldheim, 1820) (Plate 33, 1) at a 400 watt mv lamp mounted on a white screen on the veranda of his house on the Black Sea Coast near the Kamchia Resort, Fishers Village in Bulgaria, The collecting locality is situated between xerothermic *Quercus* forest and a humid longoz forest. The screen was opposite the *Fraxinus*-dominated humid forest along the Kamchia river (Plate 31). Not far away, between the longoz and the sea coast there are large, still wild sandy areas with dunes (Plate 32), which more corresponds to the habitat described in the literature sources quoted below. *Valerietta niphopasta* (Hampson, 1906) (Plate 33, 3) and *Valerietta hteblayi* Beshkov, 2006 (Plate 33, 4) (several specimens from both species and both sexes from May to September), *Hydraecia micacea* (Esper, [1789]) and *Kentrochrysalis elegans* (A. Bang-Haas, 1912) were also collected in this same locality, though at different dates.

Plate 31. Longoz forest with *Fraxinus* along the Kamchia river – locality for *Xestia trifida (F.v.W.)*

Plate 32. Coastal sand dunes separating the humid longoz forest by the Kamchia river from the Black Sea.

SB visited the Kamchia River area on 7 June 2010, running two lamps from a generator, but no *Valerietta* was found. Two further nights were spent collecting on the sands and in the humid swampy *Fraxinus* forest, but again no *Valerietta* were encountered. The most interesting species collected on the dunes were *Craniophora pontica* (Staudinger, 1879), *Acontia titania* (Esper, [1798]) = *urania* Frivaldsky, 1835, *Anarta dianthii* (Tauscher, 1809), *Hadena syriaca podolica* (Kremky, 1937) (abundant) and *Ochropleura leucogaster* (Freyer, [1831]). *Anarta dianthii* is hereby confirmed as a Bulgarian species and this is its second locality in the country. It was previously reported as a new species for Bulgaria from the Black Sea Coast at Nessebar (Soffner, 1962: 156 – Über Schmetterlinge, die bisher aus Bulgarien unbekannt waren. *Mitteilungsblatt für Insektenkunde* **6**(6): 155-157).

Anarta dianthii hungarica (F. Wagner, 1930) is known from south-east Austria, southern Slovakia, Hungary and Romania (Hacker, 1998: 722. Revision der Gattungen *Hadula* Staudinger, 1889 (=*Discestra* Hampson, 1905; = *Aglossestra* Hampson, 1905; = *Cardiestra* Boursin, 1963), *Anartomorpha* Alphéraky, 1892, *Trichanarta* Hampson, 1895, *Anarta* Ochsenheimer, 1816 und *Cardepia* Hampson, 1905 mit Beschreibung einer neuen Gattung *Hadumorpha* gen. n. (Lepidoptera, Noctuidae). – *Esperiana* **6**: 577-843 + Taf. 1-XIII.). As *Hadula dianthi hungarica* (F. Wagner, 1930) it is mentioned also from Bulgaria by Rákosy, (1996: 162 – Die Noctuiden Rumäniens (Lepidoptera Noctuidae) and by Hacker (1998: 722 *op. cit.*), but the present authors find it hard to believe that the authors quoted above have seen any Bulgarian specimen. We are not confident about the subspecific status of the specimen from Kamchia; our male specimen (Plate 33, 2) resembles ssp. *hungarica*, but is a little bit lighter. Perhaps, the light coloration is a result of the light sands in this area. Compared to the nominate subspecies from Turkey, it is smaller (wingspan 29 mm) and a little bit darker. The only specimen available for examination is intermediate form between the nominate *Anarta dianthii dianthii* and *A. dianthii hungarica*. We however recognise it here as ssp. *hungarica* because of its size, coloration and the geographical position. To solve the problem about the subspecific status of the population near Kamchia some more material is needed.

On 21 July 2010, SB collected again on the sands and in the same humid swampy *Fraxinus* forest, but no there were no examples of *Valerietta*; a single specimen was collected by RR on his house several days late. Another new locality of *Valerietta hreblayi* Beshkov, 2006 (= *bulgarica* sensu Hreblay, 1992, nec Drenovsky, 1953, junior secondary homonym), also on the Black Sea Coast, was discovered on 19 July 2010 at Otmanli, between Burgass and Chernomoretz (42°25'31" N: 027°30'15" E, at altitude 11metres asl.). This locality is between Kamchia and the only previously known localities of the species – Ropotamo and Arkoutino. The new locality is also wet swampy *Fraxinus oxycarpa* forest with

Salix caprea. This supports the view that *Valerietta hreblayi* is associated with humid *Fraxinus oxycarpa* forests and *F. oxycarpa* is probably its food plant. Its discovery in mid-July is the reason why we reject previous opinions that *Valerietta niphopasta* and *V. hreblayi* have two generation; we consider that they have one long generation from late May to early September.

The *Valerietta* population near the mouth of the Kamchia River shows a great variability in the external features, producing several intermediate forms between *V. niphopasta* and *V. hreblayi*, even the conspicuous dark centres of the stigmata typical of *V. niphopasta* can be recognised in a part of the *Valerietta hreblayi*-like specimens. We still have not checked the genitalia of any specimen and for this reason the specific identity of this population is still not clear; hybridization cannot be ruled out. According to L. Ronkay (*Noctuidae Europeae* **12**, in press) another possibility is a former hybridisation of the two species with fertile hybrids producing a sustainable population: A somewhat similar situation is observed in case of *Polia cherrug* Rákosy & Wieser, 1997. Further investigations are needed for a satisfactory understanding of the problem.

Xestia trifida trifida (Fischer von Waldheim, 1820) is known from Romanian Dobrogea, Hagieni (Neumann, H. & I. Varga, 1995: Xestia trifida (Fischer von Waldheim, 1820), eine neue Noctuidenart für Rumänien (Lepidoptera: Noctuidae). *Bull. Inf. Soc. Lepid. Rom.* **6**(3-4): 191-193), Crimea, the southern part of European Russia and Turkey (from Tüz Gölü in Anatolia, where it is local and rare, to the eastern provinces (Fibiger, M. 1993. *Noctuinae II. – Noctuidae Europeae* **2**), Turkmenistan (Rakosy, L. 1996: *op. cit.*), Trans-Caucasus (Kozhantshikov, I. 1937. Fam. Noctuidae (subfam. Agrotinae). In: *Faune de l'URSS, Nouvellé série No. 15: Insectes Lepidoptéres.* **13** (3)). The population of the Iberian Peninsula is described as ssp. *hispanica* Fibiger, 1993 (*op. cit.*). On the map for Romania in Fibiger, 1993 (*op. cit.*), *X. trifida* is marked for the border area with Ukraine and Moldova, which is not correct – the locality is on the border with Bulgaria near the Black Sea Coast. In Rakosy (*op. cit.*) however, the map is correct and presents the Hagieni locality.

According to Fibiger, 1993 (*op. cit.*) *X. trifida* inhabits desert-like, very dry, warm, open areas with sparse vegetation. A connection with deserts is also expressed by Kozhantshikov (1937, *op. cit.*). It flies in September-October and comes to light late in the night, often crawling to the lamp from some distance away. Females are rarely seen at light. The early stages are unknown. Rakosy (*op. cit.*) stated that *Xestia trifida* is extremely xerothermophilic species. Perhaps the reason why *X. trifida* was found so late in Romania and not previously noticed in Bulgaria is the late-in-the-night flight period?— STOYAN BESHKOV, National Museum of Natural History, Tsar Osvoboditel Blvd 1, 1000 Sofia, Bulgaria (E-mail: beshkov@nmnhs.com) and RADKO RADEV, Vassil Levski, Block 9, entr. 6., fl. 7, Varna, Bulgaria.

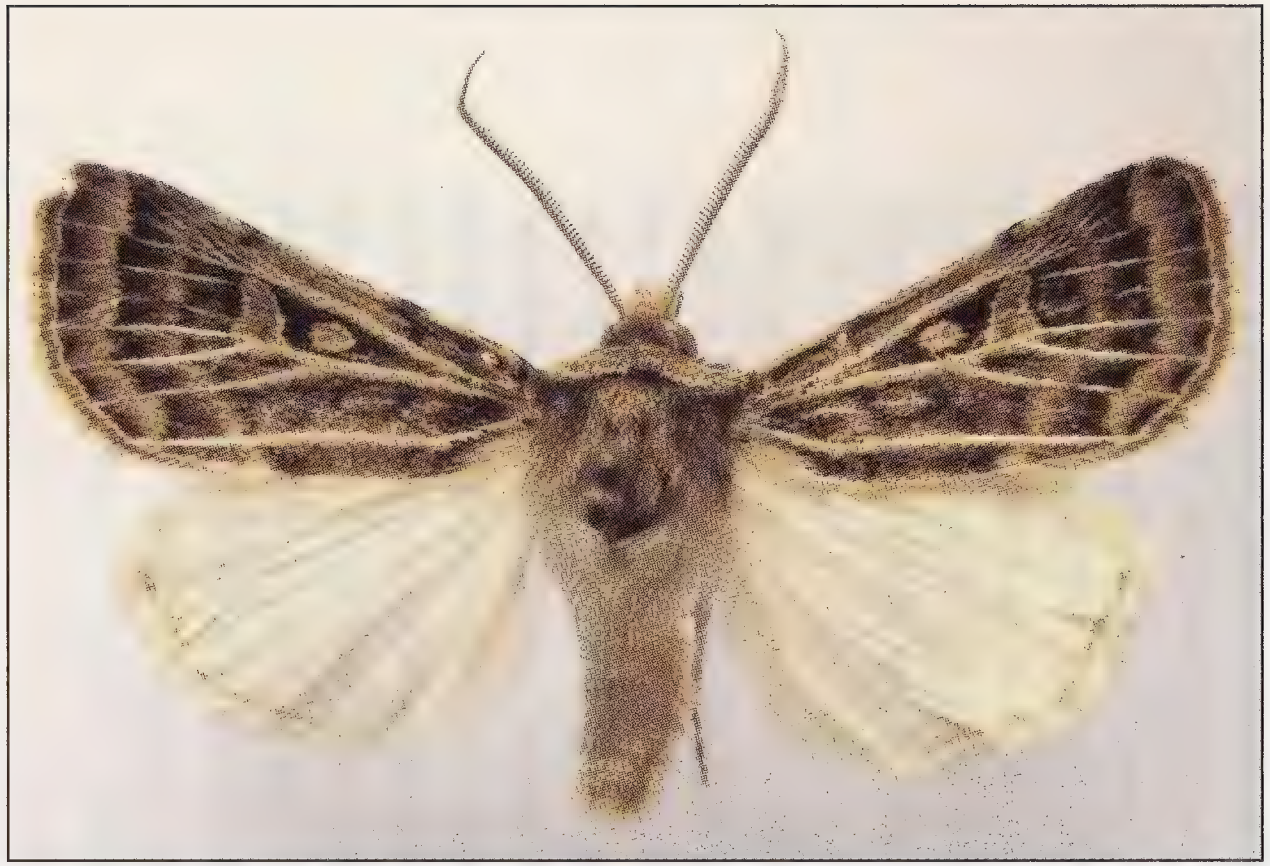


Fig. 1. *Xestia trifida* (Fischer von Waldheim, 1820), males. Bulgaria, Black Sea Coast, Kamchia Resort, Fishers Village, 27.IX.2008, R. Radev leg.

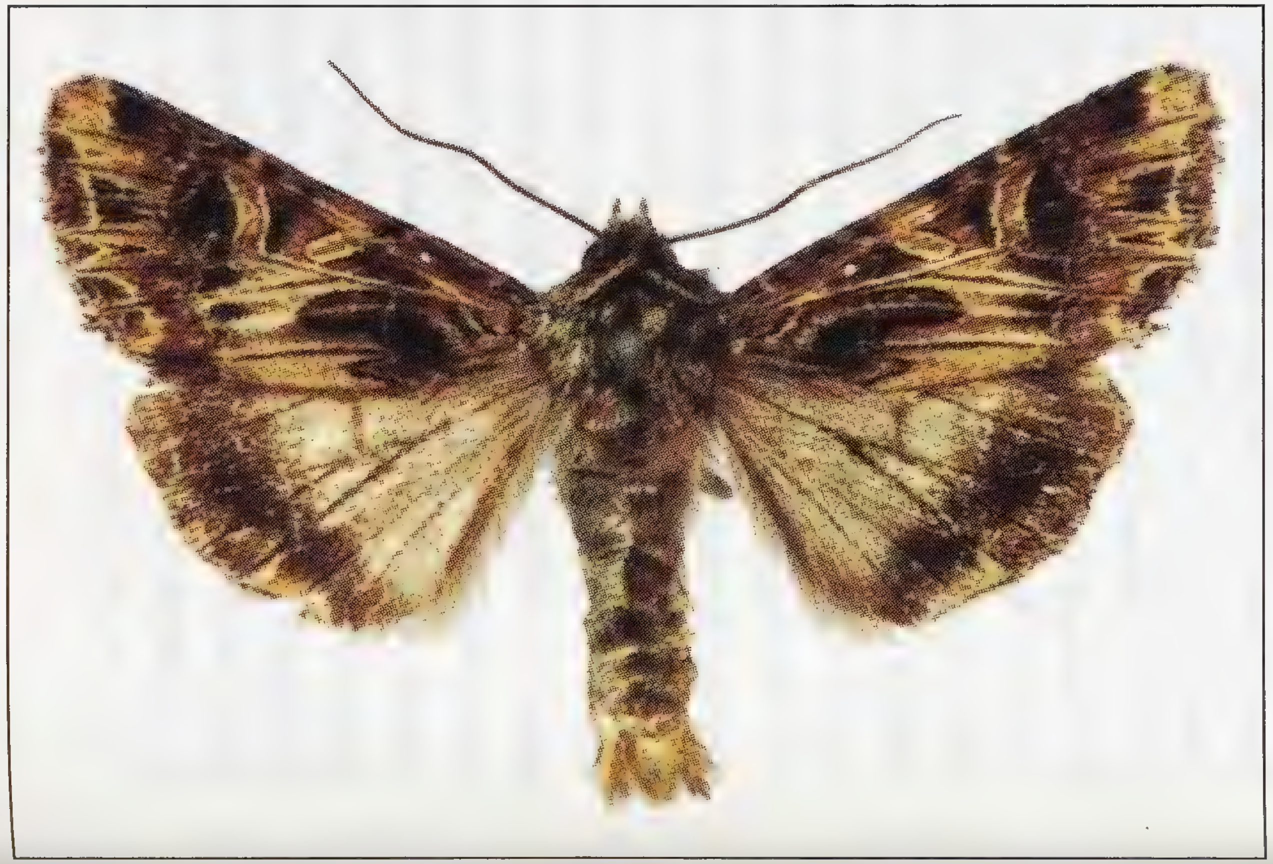


Fig. 2. *Anarta dianthii hungarica* (F. Wagner, 1930), male. Bulgaria, Black Sea Coast, between Kamchia and Shkorpilovtzi Village, 07.VI.2010, leg.

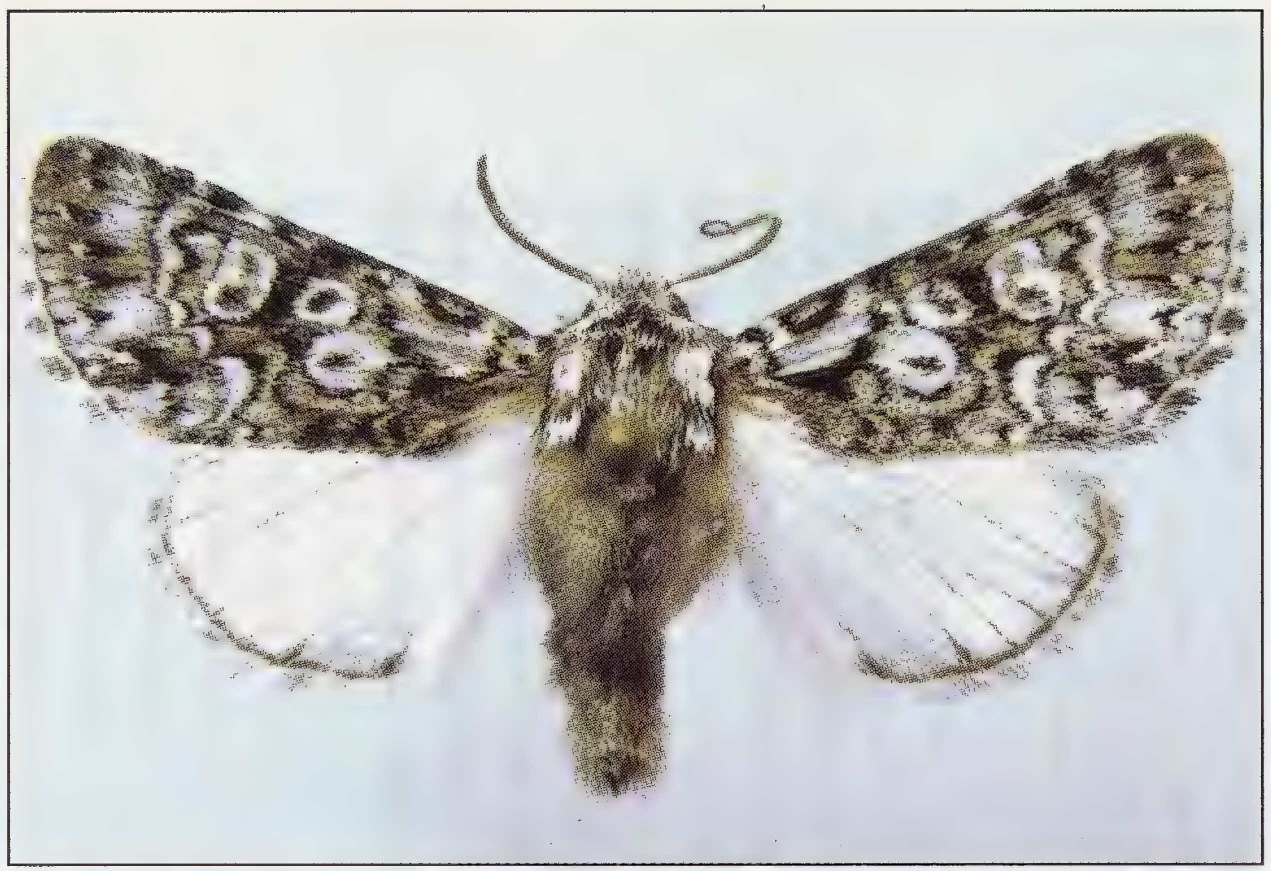


Fig. 3. *Valerietta niphopasta* (Hampson, 1906), male. Bulgaria, Black Sea Coast, Kamchia Resort, Fishers Village, leg. and in coll. R. Radev.

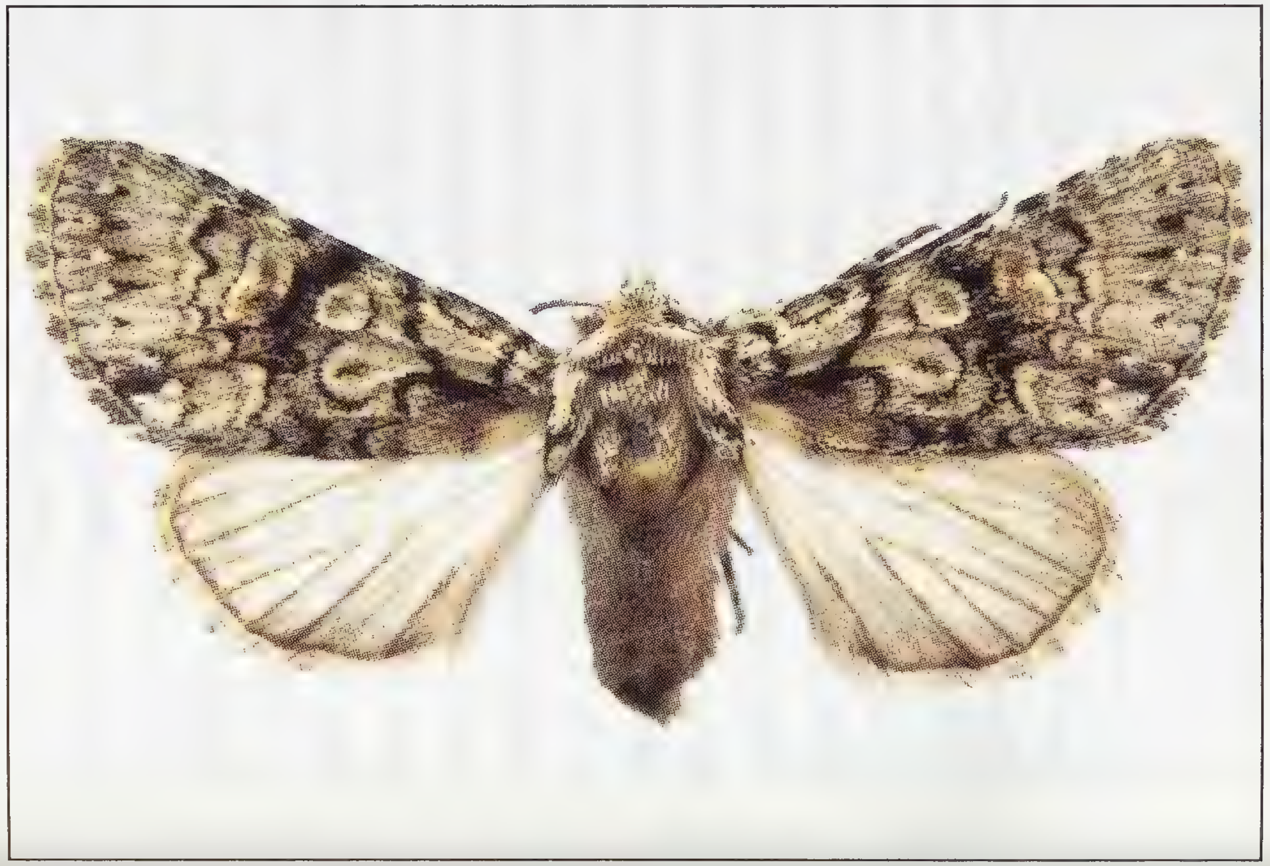


Fig. 4. *Valerietta hreblayi* Beshkov, 2006, female. Bulgaria, Black Sea Coast, Kamchia Resort, Fishers Village, leg. and in coll. R. Radev.

Lyme Grass *Chortodes elymi* (Tr.) (Lep.: Noctuidae) in both Lancashire Vice Counties, 59 and 60

On the night of 23 July 2010, whilst operating a mercury vapour light trap in a friend's garden in Crosby, Liverpool (VC 59), Charlie Fletcher (CF) encountered a wainscot-type moth which he was unfamiliar with. It was photographed and a picture sent to Graham Jones (GJ) and Stephen Palmer (SP), respectively the Lancashire County Recorders for the macromoths and micromoths, for assistance. Neither of them was familiar with the species and as the moth had been released near to the site of capture we thought it unlikely that a positive identification could be reached.

GJ decided it would be worth forwarding the picture to Roy Leverton who kindly replied that he was sure it was Lyme Grass. The known distribution of this species, (generally on the eastern side of the UK) suggested this to be a most unusual record, but interestingly the foodplant Lyme-grass *Elymus arenarius* was known to be present on the coastline about a mile west of the trapping site. A few days after CF encountered the moth, he telephoned SP to advise the moth had been relocated dead in his car – on release it had presumably flown straight into the vehicle. This allowed a dissection to be carried out which confirmed Roy Leverton's identification of the moth as Lyme Grass (a male).

Following the dissemination of the record locally, via the Lancashire Moth Group website (*www.lancashiremoths.co.uk*), SP was contacted by Patrick Davies from St Annes (VC 60), near Blackpool who passed on the following information.

'*Last year (2009) I caught a couple of moths in my St. Annes garden that I identified as Lyme Grass. However, realising that this species didn't occur anywhere nearby and not having any experience of the species, I started to doubt my identification. I consulted a friend who, although not familiar with the species, was happy with my identification. I had intended to submit images to you for consideration in 2009, but decided to see if I caught them again at the same time this year. This has not happened, because I have not been able to run my trap as regularly and I was actually away during the week in question.*'

The details of the St Annes specimens were as follows:

20 June 2009: one fairly pale in colour.
26 June 2009: one darker in colour than that above.
27 June 2009: one which I believe to be the same individual as that caught on 26 June.

Good quality photographs of the above were submitted allowing confirmation of the identification.

These constituted the first records for VC 59 and VC 60, but were not the end of the story. An additional specimen was located on 19 July 2010 at a light trap in Formby (VC 59), approximately eight kilometres north of the Crosby site, by Trevor Davenport. An astonishing set of records for a moth that has previously to my knowledge never been recorded on the western side of Britain.— Stephen Palmer, 137 Lightfoot Lane, Fulwood, Preston, Lancashire PR4 0AH. (E-mail: s.palmer12@btopenworld.com).

Biology of *Phytomyza (Chromatomyia) aprilina* Goureau, 1851 (Dip.: Agromyzidae)

When the first article on the winter generation of *Chromatomyia aprilina* appeared (Palmer, 2009. Winter mines of *Chromatomyia aprilina* (Goureau 1851) (Dip.: Agromyzidae): first UK records. *Ent. Rec.* **121**: 164-165) I thought it was simply a case of an entomologist discovering that some insects are active even during winter – the Dutch connection was surprising. Now with additional 'evidence' coming forward (Homan, 2010. The winter generation of *Chromatomyia aprilina* (Goureau 1851) (Dip.: Agromyzidae): more established than thought. *Ent. Rec.* **122**: 169) it is probably appropriate to add my own observations.

There are five species of *Lonicera*-feeding Agromyzidae currently recorded from the British Isles, namely *C. aprilina* (Goureau, 1851), *C. lonicerae* (Robineau-Desvoidy, 1851), *C. periclymeni* (de Meijere *in* Hendel, 1922), *Aulagromyza cornigera* (Griffiths, 1973) and *A. hendeliana* (Hering, 1926). Another species, *A. luteoscutellata* (de Meijere, 1924) is widespread in Europe but not recorded here yet. The three most frequently encountered and most widespread are the three *Chromatomyia* species. Chandler (1998. Checklists of Insects of British Isles (New Series).Part 1: Diptera. *Handbooks for the Identification of British Insects* **12**) ascribed all three to the genus *Chromatomyia* Hardy, 1849 following Griffiths (1974. Studies on Boreal Agromyzidae (Diptera). V. The genus *Chromatomyia* Hardy, with revision of Caprifoliaceae-mining species. *Quaestionnes Entomologica* **10**: 35-69). This transfer was accepted by Spencer (1976. The Agromyzidae (Diptera) of Fennoscandia and Denmark. *Fauna Entomologica Scandinavica* **5**, part 2), however more recent studies suggest that the retention of *Chromatomyia* as a full genus cannot be sustained and relegation to subspecies status is more appropriate. The *Chromatomyia* group share many genitalic characters, but many non-*Chromatomyia* species share the groups prime feature, namely the behaviour of pupating within the leaf mine. The pre-adult stages of the three *Lonicera*-feeding *Chromatomyia* can be separated from each other by the form of the posterior spiracles, especially those of the puparium, which in all three cases is usually formed within the mine (see Spencer, 1976 for details). Identifying them from the structure of the leaf mine can be risky as many intermediate mine-forms occur.

With regards to *Phytomyza (Chromatomyia) aprilina*, Hering (1957. *Bestimmungstabellen der Blattminen von Europa* Vol. **1**, 648pp. W.Junk, 's-Gravenhage) gives (under the synonym *Napomyza (Phytomyza) lonicerella* Hendel) May, June and August as the periods for the leaf mines in Europe. Robbins (1991. *The Leaf Miners of Warwickshire.* Warwickshire Biological Records Centre, Warwick Museum) also indicates that it is bivoltine mining in early Summer and early Autumn in central England. In southern Scotland the mines of *aprilina* can be found at any time from January to August. During the last 30 years I have **reared** the fly from leaf mines collected in January

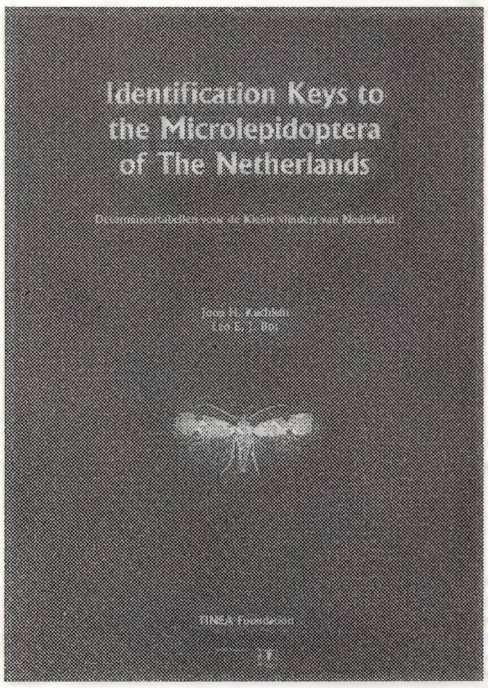
(1 occasion), February (3), March (8), April (5), May (2), June (2), July (2) and August (3). These were incidental collections while out and about and were not systematic in any way. The above rearings were nearly all from south-east Scotland, in Watsonian vice-counties 79(1 rearing), 80(1), 81(1), 83(9), 85(2), 86(2), 88(2), 89(2), 90(1), 91(3) and 104(2). Interestingly the only collection date recorded in Norway by Spencer (1976) was 14 July!

An interesting feature of this trio of species is that, in contrast to *P. (C.) aprilina*, both *P. (C.) periclymeni* and *P. (C.) lonicerae* appear to mine primarily in the second half of the year. *P. (C.) periclymeni* has been reared from leaf mines collected in all months from June to October inclusive, and *P. (C.) lonicerae* in all months from June to November inclusive. On a single occasion occupied leaf mines of *lonicerae* were found in January (1 January 1999), and subsequently reared and the identity of the fly carefully checked! It appears that these three species are making efficient use of their foodplant and reducing inter-specific competition.

Both British *Aulagromyza* species feeding on *Lonicera* usually pupate external to the mine. I have no experience with *A. cornigera* and have only reared *A. hendeliana* from Scotland on four occasions, all from mines collected in May and June.— Keith P. Bland, 35 Charterhall Road, Edinburgh EH9 3HS.

BOOK REVIEW

Identification keys to the microlepidoptera of The Netherlands by **Joop H. Kuchlein and Leo E. J. Bot**. 416pp., 217 x 304 mm, Hardbound, KNNV Publishing and the Tinea Foundation, 2010, ISBN 978 905011 341 0. €59.95 plus post and packing from KNNV Publishing, PO Box 310, NL 3700 AH Zeist, The Netherlands (www.knnvpublishing.nl). English with both English and Dutch introductory chapters.



It is regrettable that most Lepidopterists (and I include myself) like an easy life when it comes to moth identification. Given the choice of a picture or using a key we go for the picture every time! Perhaps this is the reason why relatively few people 'do' micro moths. The situation is not helped by the fact that existing British keys to the smaller moths are either out of date or within out of print and hard to obtain historical texts or else are locked away beyond the financial reach of many amateurs in the volumes of works such as *The Moths and Butterflies of Great Britain and Ireland.* Another reason might be the complicated nature of some keys. These new keys, however, may help to change that situation.

In this new Dutch work, all British families of Lepidoptera are included in the family keys, including the macros (in which the authors include the Psychidae). The reader is then directed to separate keys for the species in each 'micro' family. I have not had time to peruse the species included, although for those who are interested a revised checklist of Dutch micros is also presented in the introductory pages. Certainly there are included some species that are not currently British; similarly, some British species will be missing. This means, of course, that occasionally the keys may give a wrong answer when used on British material, but as regular users of dichotomous keys will already be aware, one should never rely on the answer from any key in isolation. Having achieved a name it is then essential to look up that species and make sure the answer is correct and in this way new species might easily be added rather than overlooked.

These new keys appear to be relatively simple to use since they employ easily seen characters wherever possible. The authors state that they have tried to avoid characters such as wing venation, examination of which might mean damaging the specimen, and in general they appear to have been successful in this venture. The user needs, however, to bear this in mind – the reason why some keys *appear* to be un-necessarily complicated whilst others seem relatively simple is that the latter gives you an answer from the expected list of answers whilst the former takes into account the critical taxonomic characters so that new species are not overlooked. By way of a convenient example, in this very issue of the journal there is a paper introducing a new genus, *Barea*, to the British moth fauna. Superficially, the live moth looks like a *Depressaria* and keys that are based on simple to observe characters of wing pattern might reach that incorrect conclusion. However, removing scales from the moth's head reveals an absence of ocelli, placing it in a quite different subfamily. Using keys that include these harder to observe characters should lead the user to an unsatisfactory answer and so 'ring the alarm bells' that the specimen is something that warrants a closer look.

That said, many people who use these keys may be non-experts who, in any event, will want others to check their identifications. If used carefully these new keys should enable a much larger number of people to start naming their micros and it should not be forgotten by beginners that 'the experts' tend to be far more amenable when it comes to checking your moths if you have already 'had a go'. At just under 60 Euros this is withou doubt a book that British Lepidopterists will want add to their list for Santa Claus to bring this coming December.

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Book Review

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MICROLEPIDOPTERA REVIEW OF 2009

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Abstract

Noteworthy records of microlepidoptera collected during 2009 are summarised, including seven species new to the British Isles and numerous new vice-county records.

Introduction

2009 started with a spell of unusually cold weather, before rather milder conditions in February and March resulted in a mid-late winter temperature close to the long-term average. Western and northern Britain received much less rain and snow than usual, despite occasional heavy snow-falls in England and Wales, and the eastern areas were close to average rainfall. Spring was then warmer than normal, although not as warm as in 2007, with many fewer frosty days than expected and this trend was especially marked in north-east England and south-eastern Scotland. Western Scotland was very much wetter than the recent long-term average but eastern Britain was generally rather dry, especially in the eastern Midlands and the east coast of England.

Although the overall summer temperature in 2009 was slightly higher than normal, this masks a considerable seasonal change. The early summer was rather warm, especially in north-west Scotland and the Hebrides, with May and June having less rain than normal, whereas the late summer was generally slightly cooler than average and rather cloudy and July was the wettest for many years, with localised serious floods, and in August this trend continued in the north-west and Northern Ireland. Overall, the west country, south Wales, Cumbria and south-west Scotland and Northern Ireland were much wetter than normal, and south-east England was around average. Autumn was then rather warm throughout, but especially so in south-east England and even November was largely frost-free. Associated with this, the Midlands and East Anglia were rather dry, as was the extreme north-west of Scotland, whereas southern England, northern England and southern Scotland and particularly north-east Scotland were very wet. December was then much colder than average, especially in Scotland, Northern Ireland and north-west England, leading into a winter period that was colder than any since 1962/63. Despite the cold, most of central and western Britain was much drier than expected, whereas all eastern areas, including much of south-east and south-central England, were much wetter, with much snow.

Seven species were recorded for the first time in UK in 2009. *Ectoedemia heckfordi* Van Nieukerken, Laštůvka & Laštůvka was actually first bred from tenanted mines on *Quercus petraea* in Devon in 2004 but it was only described in 2010. Another *Ectoedemia* species, *E. longicaudella* Klimesch was found as an adult in Buckinghamshire and this has opened a serious question. The larval feeding signs of this species are so far indistinguishable from those of *E. atrifrontella* (Stainton). If *E. longicaudella* is resident, then previous records of *E. atrifrontella,* based on what was thought to be the characteristic feeding signs, may actually refer to *E. longicaudella.* Consequently, the only certain records are those of dissected adults.

Of other new species, *Tuta absoluta* (Meyrick) may be a stray adventive species, whereas *Blastobasis vittata* (Wollaston) seems to be establishing itself as a resident in the south, as yet another invasive *Blastobasis* species. *Cnephasia pumicana* (Zeller) has recently been recognised as distinct from *C. pasiuana* (Hübner) and has since been discovered in collections dating back to 1986, suggesting that it invaded south-eastern counties around that date. The status of *Cymolomia hartigiana* (Saxesen), found in East Suffolk, is as yet unknown, and the same applies to the pyralid *Musotima nitidalis* (Walker), recorded in Dorset (but within the boundary of VC11).

Few species were recorded as new to Scotland and Wales in 2009 but seven were found new to Ireland, which is rapidly being explored, so that its fauna is becoming much better known. Two other species also deserve emphasis. *Cameraria ohridella* Deschka & Dimic has continued its spread northwards, reaching Lancashire, and most microlepidopterists have become used to seeing horse chestnut leaves overwhelmed by mines and thoroughly 'autumnal' by July. *Plutella haasi* Staudinger has always been an enigmatic species. One specimen was found on Beinn Eighe in 1954 and it has always been regarded as a likely resident, although its foodplant is unknown. Elsewhere it is known from only six locations in Scandinavia. Bob Heckford found five further specimens on Beinn Eighe on 5 July 2009, near to the original locality, so confirming its status as a resident, and leaving the way open to discovery of its natural history.

The very welcome advent of the National Moth Recording Scheme has established a system whereby every Vice-county has its own dedicated recorder. Although the scheme only concerns macro-moths, many of the VC recorders have taken a strong interest in microlepidoptera and have unearthed records that are additional to those mapped in the volumes of The Moths and Butterflies of Great Britain and Ireland or on our updated maps. Consequently, we have repeated last year's decision to include many of these new records here, even when they pre-date 2009. Nevertheless, our long-term policy remains one of concentrating on new records from the year in question.

These new records and recorders have thrown into clear focus a problem which needs to be considered. When this yearly review was started, virtually all microlepidopterists were subscribers to the *Entomologist's Record*, whereas now there are many who do not see these reviews and so are not up to date with the distribution of species. Whilst we very much welcome the increased interest and the many new records, we are unsure how to make the yearly reviews accessible to the newly involved recorders, or to share the maps that now exist. We might hope that in time more recorders will subscribe, but meanwhile we are worried that many records are reported on websites, but never formally or securely made available for future workers. We would welcome suggested ways to improve our own coverage and to make the records more readily known to the new recorders. Our review is always made available to us in 'pdf' format, after publication, and we are considering how we might use this to communicate the records to others.

In this context, please may we ask for many more records from 2010, arranged in the standard format and with a national grid reference, and the easiest way to for us to receive these is as a **WORD file** to **JRL**. **Please do not submit records in spreadsheets**, as these then require extensive editing, adding enormously to the task of preparing the review. Thank you to so many enthusiasts, whose records make this such an extensive and important contribution, and especially to Ian Thirlwell for help with the tedious task of checking and collating the new records.

The 2009 records have come from the following recorders, each indicated in the text by his or her initials. Other recorders are named in full. D.J.L. Agassiz, M.V. Albertini, H.E. Beaumont, D.T. Biggs, K.P. Bland,, K.G.M. Bond, T. Bryant, D. Budworth, P. Clark, P.J. Clarke, V.F. Clarke, P. Clement, J. Clifton, G.A. Collins, A. Cook, M. Dale, D.W.W. Davidson, A.M. Davis, B. Dickerson, R.J. Dickson, B. Elliott, G. Finch, C.H. Fletcher, B. Formstone, T.H. Freed, R.G. Gaunt, A.N. Graham, J.E. Graham, N. Gregory, P.R. Hall, M.C. Harvey, R.J. Heckford, B.P. Henwood, J.B. Higgott, S.H. Hind, S.A. Knill-Jones, J. Knowler, J.R. Langmaid, A.D. Lewis, N.R. Lowe, J.A. McGill, M. McGinty, D.V. Manning, R.J. Moore, E. O'Donnell, K.A. Palmer, R.M. Palmer, S.M. Palmer, M.S. Parsons, T. Pendleton, C.W. Plant, J. Porter, C.R. Pratt, A.W. Prichard, K.W. Regan, E. Rolston, A.N.B. Simpson, I.F. Smith, N.J. Stone, T.J. Tams, J.E. Thorpe, L.A.C. Truscott, M.J. Wall, J.R. Wheeler, P.R. Williams, M.R. Young.

New vice-county records are shown with the VC number both underlined and in **bold** type. Journals are abbreviated as follows: *Ent. Rec.* for *Entomologist's Record and Journal of Variation*; *Ent. Gaz.* for *Entomologists' Gazette*; *BJENH* for *British Journal of Entomology and Natural History*; and *Atropos* is named in full. RIS refers to the Rothamsted Insect Survey and VCH to Victoria County History. SEM is abbreviation for Scottish Entomologist's Meeting.

SYSTEMATIC LIST

MICROPTERIGIDAE

3 *Micropterix aureatella* (Scop.) — Knockaroura W580963 (**H5**) 17.v.2009 — KGMB

ERIOCRANIIDAE

7 *Eriocrania chrysolepidella* (Zell.) — Marline Valley, Hastings TQ7812 (**14**) 6.iv.2009, genitalia det. and larval mines on *Carpinus* 22.v.2009 — GAC

8 *E. unimaculella* (Zett.) — Bach Howey SO1042 (**43**) tenanted mine on *Betula* sp. 23.v.2009 — PJC, VFC & JRL

9 *E. sparrmannella* (Bosc) — Mottistone Common SZ4084 (**10**) tenanted mines on *Betula* sp. 12.vi.2009 — DTB; Abercamlo Bog RWT Reserve SO073649 (**43**) tenanted mine on *Betula* sp. 24.vi.2009 — PJC & VFC

10 *E. salopiella* (Staint.) — Bach Howey SO1042 (**43**) tenanted mines on *Betula* sp. 23.v.2009 — PJC, VFC & JRL

12 *E. sangii* (Wood) — Hutton Conyers SE3273 (**65**) tenanted mines on *Betula pendula* 14.v.2009 — CHF

13 *E. semipurpurella* (Steph.) — Killiecrankie NN903636 (**89**) 16.iv.2009 det. MRY — JET

NEPTICULIDAE

20 *Ectoedemia decentella* (H.-S.) — Orton Waterville TL157957 (**31**) 28.v.2009 — J. Newman *per* BD

23 *E. argyropeza* (Zell.) — Hutton Conyers SE3273 (**65**) tenanted mines on *Populus tremula* 31.x.2009 — CHF

24a *E. hannoverella* (Glitz) — Henlow Park and Grange TL1838 (**30**) tenanted mines on *Populus* x *canadensis* 12.xi.2009 — A.M. & M.G. Banthorpe *per* DVM

25 *E. intimella* (Zell.) — Arncliffe Wood NZ4500 (**62**) vacated mines on *Salix caprea* 5.xi.2009— CHF

27 *E. spinosella* (Joannis) — Darland TQ7766 (**15**) several vacated mines 14.viii.2009, conf. JRL — AMD

30 *E. arcuatella* (H.-S.) — Horsley Wood ST8397 (**34**) mine on *Fragaria vesca* 28.ix.2009 — G.H.J. Meredith *per* RGG

35a *E. heckfordi* Van Nieukerken, Laštůvka & Laštůvka — Hembury Woods (**3**) 28, 29 & 5.ix.2004 several tenanted and vacated mines on *Quercus petraea*, moths bred 15-22.v.2005 — RJH; Dart Valley (3) 20 & 23.viii.2005 a few vacated and two tenanted mines on *Quercus petraea* moth bred 20.v.2006 — RJH; lay-by near Buckfastleigh (3) 11.viii.2006 two vacated mines on *Quercus robur* — RJH; Hembury Woods 11.viii.2006 one tenanted mine on *Quercus petraea* — RJH; Dart Valley, a different area from 2005, 12.viii.2006 very early tenanted mines on *Quercus robur* — S.D. Beavan & RJH. **New to the British Isles** and undescribed until 2010 (*ZooKeys* 32:1-82). So far known only from three areas in South Devon and nowhere else in the British Isles or continental Europe.

36a *E. heringella* (Mariani) — Shoreham TQ234064 (**13**) vacated mines on *Quercus ilex* 5.vi.2009; Hastings TQ805098 (**14**) tenanted mine on *Quercus ilex* 14.ii.2009 — KAP; Broom TL1731 (**30**) vacated mines on *Quercus ilex* 30.xi.2009 — DVM

[41 *E. atrifrontella* (Staint.) — Ryton Wood SP38097244 (**38**) 75mm long mines on trunk & branch of young oak tree 28.ii.2009 — M. Kennard *per* NJS]

41b *E. longicaudella* Klim. — Shabbington Wood SP6210 (**24**) at mv light 12.vii.2009, genitalia det. DVM, conf. E.J. van Nieukerken — PRH, **New to the British Isles**

55 *Stigmella aeneofasciella* (H.-S.) — Wilmcote Rough SP15335834 (**38**) early mines on leaves of *Agrimonia* sp. 5.x.2009 — M. Kennard *per* NJS

59 *S. poterii* (Staint.) — Lyme Park SJ9582 (**58**) vacated mine on *Potentilla erecta* 3.x.2009 — SHH

63 *S. lemniscella* (Zell.) — Breidden Hill SJ295149 (**47**) mine on *Ulmus* sp. 6.viii.2009 — ANG & JEG *per* PRW

64 *S. continuella* (Staint.) — Llanstephan Bridleway SO116419 (**43**) vacated mine on *Betula* sp. 25.vii.2009 — PJC & VFC

70 *S. obliquella* (Hein.) — Hutton Rudby NZ4606 (**62**) vacated mines on *Salix sp* 5.xi.2009 — CHF

72 *S. myrtillella* (Staint.) — Blackdown SY6187 (9) vacated mine on *Vaccinium myrtillus* 9.ix.2009, first VC record since 1930s – JRL & BE

85 *S. suberivora* (Staint.) — Hinchingbrooke TL228715 (**31**) vacated mine on *Quercus ilex* 15.xi.2009 — BD

86 *S. roborella* (Johan.) — Serridge Green SO6214 (**34**) 18.viii.2009, genitalia det. — G.H.J. Meredith *per* RGG

87 *S. svenssoni* (Johan.) — Sullington Warren TQ0914 (**13**) vacated mine on *Quercus robur* 20.viii.2009 — JRL & RMP

88 *S. samiatella* (Zell.) — Finemere Wood SP7121 (**24**) 11.viii.2009, male genitalia det. P. Hall — D. Wilton *per* MVA; Alsager SJ819545 (**58**) 13.vi.2009, genitalia det. — MD; Skelton NZ6619 (**62**) 22.vi.2009, genitalia det. HEB — D. Money *per* HEB

95 *S. viscerella* (Staint.) — Baildon SE1638 (**64**) vacated mine on *Ulmus* sp. 25.ix. 2009 — D. Parkinson *per* HEB

101 *S. pyri* (Glitz) — Gwen and Vera's Fields SO6927 (**34**) mine on *Pyrus* 10.ix.2009 — G.H.J. Meredith *per* RGG

102 *S. aceris* (Frey) — Burnham Beeches SU9484 (**24**) in RIS trap 8-14.x.2009, genitalia det. — PRH

104 *S. magdalenae* (Klim.) — Brand Plantation, Flash SK0466 (**39**) tenanted and vacated mines on *Sorbus aucuparia* 9.ix.2009 — SHH

109 *S. prunetorum* (Staint.) — Teifi Marshes NNR SN18854526 (**45**) vacated mines on *Prunus spinosa* 8.viii.2009 — ADL

115 *S. alnetella* (Staint.) — Cors y Llyn NNR SJ0155 (**43**) vacated mines on *Alnus glutinosa* 16.x.2009 — PJC, VFC, NRL & JRL

118 *Enteucha acetosae* (Staint.) — Pin Dale SK1582 (**57**) tenanted and vacated mines on *Rumex acetosella* 10.ix.09 — SHH; Dowlaw NT8370 (**81**) mines on *Rumex acetosa* 21.ix.2009, moths bred — KPB

TISCHERIIDAE

125 *Emmetia marginea* (Haw.) — Stamullen O146662 (**H22**) 29.vii.2009 — EO'D

PRODOXIDAE

131 *Incurvaria oehlmanniella* (Hübn.) — Whinyard Rocks SO207630 (**43**) 16.vi.2009 — PJC & VFC

134 *Lampronia flavimitrella* (Hübn.) — Frith Wood SU962306 (**13**) female 9.v.2009, det. AMD — M. Blencowe *per* AMD

ADELIDAE

140 *Nematopogon swammerdamella* (Linn.) — Glack Harnies NJ2836 (**94**) 26.v.2004 — SMP *per* MRY

142 *N. pilella* ([D. & S.]) — Mynydd Llanwenarth, Sugar Loaf SO270170 (**35**) 28.v.2009 — JRL

146 *Nemophora cupriacella* (Hübn.) — Paull Holme Strays TA1824 (**61**) 3.vii.2009, det. HEB — W. Plowes *per* HEB

149 *Adela cuprella* ([D. & S.]) — Locks Park Farm near Hatherleigh SS514023 (**4**) 11.iv.2009 — R. Wolton *per* RJH; (**5**) 8.iv.2009 — W. Urwin

150 *A. reaumurella* (Linn.) — Castleblagh Wood W711982 (**H5**) 3.v.2009 — KGMB

151 *A. croesella (Scop.)* — Kithurst Hill TQ0712 **(13)** 26.v.2009, first vice-county record for over a century — RMP

153 *A. fibulella* ([D. & S.]) — Llanelwedd Old Qarry SO058520 (43) 28.v.2009 — PJC & VFC

PSYCHIDAE

180 *Diplodoma laichartingella* (Goeze) — Rowington - Hay Wood SP20907140 (38) larval case attached to birch trunk 30.v.2009 — M. Kennard *per* NJS

TINEIDAE

200 *Psychoides filicivora* (Meyr.) — Marline Valley, Hastings TQ7812 (14) 22.v.2009 — GAC; Halifax SE0922 (63) mines on *Phyllitis scolopendrium* 26.ii.2009, moth bred — C. Streets *per* HEB; Whitley Bay NZ350731 (67) 1.vi.2009 — KWR

219 *Nemapogon ruricolella* (Staint.) — Savernake Forest SU2167 (7) larvae in fungus-ridden dead wood in hollow tree 2.iv.2009, moths bred — BE & JRL

220 *N. clematella* (Fabr.) — Hackfall Woods SE2377 (64) 1.vii.2009, det HEB — CHF

223 *Nemaxera betulinella* (Paykull) — Llanfyllin SJ157210 (47) 16.viii.2009, det. PRW — M.D. Haigh *per* PRW

224 *Triaxomera parasitella* (Hübn.) — Fulwood, Preston SD5332 (60) 14.vi.2009 — A. Powell *per* SMP

225 *T. fulvimitrella* (Sodof.) — Inchmarlo NO6796 (91) 21.vi.2009 — C. Holmes *per* MRY

228 *Monopis weaverella* (Scott) — Hayes Barton, Jacobstowe SS5900 (4) over 30 moths of both sexes emerged on 14.viii.2009 from an owl pellet lying on the ground in a small wood collected on 10.vi.2009 genitalia det. — S.D. Beavan *per* RJH; Westmead, Bowness-on-Solway NY207618 (70) 29.v.2008 — E. Still *per* MRY; Outerwards Bridge NS234656 (75) 16.vi.2009, det. JRL from photograph — MM

231 *M. imella* (Hübn.) — Wash Common SU453646 (22) 22.vi.2009 — N. Asher *per* MCH

233 *M. fenestratella* (Heyd.) — Old Weston TL099774 (31) 2.vi.2009, genitalia det. BD — K. Royles *per* BD

236 *Tineola bisselliella* (Hummel) — Oldmeldrum NJ823279 (93) 12.iii.2009 — MRY

243 *Tinea dubiella* Staint. — Cockayne Hatley TL2549 (30) in RIS trap 27.viii.-2.ix.2009, genitalia det. — DVM

246 *T. semifulvella* Haw. — Hayes Barton, Jacobstowe SS5900 (4) a few bred from an owl pellet found 10.vi.2009, first record of this species being bred from this pabulum — S.D. Beavan *per* RJH

247 *T. trinotella* Thunb. — Barna M243236 (**H16**) 24.vi.2009 — KGMB

278a *Opogona omoscopa* (Meyr.) — Jackson's Hill, St Mary's, Isles of Scilly SV907105 (1) one on 10.x.2006 — TJT, and over eighty between 22 & 30.x.2009, genitalia det. JC — PC, *Atropos* **39**: 75; Fareham SU577070 (11) 12.x.2005, det. JC — K.J. Wheeler *per* RJD

BUCCULATRICIDAE

266 *Bucculatrix nigricomella* Zell. — Dunaskin Ironworks NS4408 (75) mines on *Leucanthemum vulgare* 1.viii.2009 – SEM *per* KPB

273 *B. thoracella* (Thunb.) — St Helens, Hastings TQ8111 (14) mines on *Tilia* sp. 9.x.2009 — GAC; Grange, Edinburgh NT2571 (83) larvae and mines on *Tilia* sp. 29.vii.2009 — KPB, **New to Scotland**

ROESLERSTAMMIIDAE

447 *Roeslerstammia erxlebella* (Fabr.) — Leighton Moss SD477749 (**60**) 22.viii.2009 — SMP

GRACILLARIIDAE

280 *Caloptilia cuculipennella* (Hübn.) — Collard Hill ST4834 (**6**) cones on *Ligustrum* 25.vi.09, only parasitoids bred, the early date implies that this species has become bivoltine whereas it is cited as univoltine in standard British literature — DJLA

284 *C. rufipennella* (Hübn.) — Dublin (Nat. Botanic Gds) O147373 (**H21**) 15.viii.2009, genitalia det. — KGMB

285 *C. azaleella* (Brants) — Lower Stondon TL154347 (**30**) 9.viii.2009, det. DVM — A.M and M.G. Banthorpe *per* DVM; Chester Park ST6374 (**34**) 24.v.2009 — N. Jordan-Mellersh *per* RGG; Monkseaton NZ338723 (**67**) 12.vii.2009 — M.S. Hodgson *per* TJT

290 *C. semifascia* (Haw.) — Shotteswell SP42104545 (**38**) mine and spinning on *Acer campestre* 8.x.2009 — M. Kennard *per* NJS

296 *Calybites phasianipennella* (Hübn.) — Abbotskerswell SX859687 (**3**) 5.x.2009 — BPH

299 *Parectopa ononidis* (Zell.) — Old Weston, TL099774 (**31**) 13.viii.2009, genitalia det. — K. Royles per BD

308 *Parornix finitimella* (Zell.) — Nosterfield NR SE2779 (**65**) 12.viii.2009, genitalia det. CHF — J. C. Warwick et al. per CHF

321a *Phyllonorycter platani* (Staud.) — Glasbury SO181392 (**43**) mines on *Platanus* x *hispanica* 29.x.2009 — PJC & VFC

326 *P. blancardella* (Fabr.) — Glasbury SO180390 (**43**) mines on *Malus* 29.iv.2009, moths bred — PJC & VFC

327 *P. hostis* Triberti (= *cydoniella* auctt.) — Wareham Forest SY8891 (**9**) mines on *Malus sylvestris* 7.x.2008, moths bred, genitalia det. — PHS; Osborne Estate SZ5195 (**10**) mines on *Malus domestica* 12.x.2008, one moth bred, female genitalia det. JRL — DTB, BE & JRL; Park Wood SO1633 (**42**) mines on *Malus sylvestris* and *M. domestica* 19.x.2009 — NRL & JRL

332a *P. leucographella* (Zell.) — Storrington TQ078142 **(13)** mines on *Prunus avium 27.ix.2009*, previously unrecorded foodplant — RMP; Llechryd (Llys y Wern) SN 208447 (**46**) mines on *Pyracantha* 23.i.2009 — W. James *per* ADL; Holmbridge SE1206 (63) larval mines on *Laburnum anagyroides* 20.ix.2009, previously unrecorded foodplant — SHH; Cork City (Distillery Fields) W666720 (**H4**) mines on *Pyracantha* 1.iv.2009 — KGMB; Mallow (Station) W552987 (**H5**) mines on *Pyracantha* 14.xi.2009 — KGMB

335 *P. salicicolella* (Sirc.) — Tramore S578014 (**H6**) 20.vii.2006, genitalia det. KGMB — TB

336 *P. dubitella* (H. – S.) — Eastfield NZ3306 (**65**) mines on *Salix caprea* 16.x.2008, moths bred — CHF

344 *P. strigulatella* (L. & Z.) — Woods Mill TQ2113 (**13**) mines on *Alnus incana* 19.viii.2009 — JRL & RMP; Moira SK306164 (**55**) mines on *Alnus incana* 4.x.2009 — GF; Dove Stone Reservoir SE0103 (**63**) larval mines on *Alnus incana* 17.ix.2009 — SHH; Aldborough St John NZ2010 (**65**) mines on *Alnus incana* 6.ix.2008, moths bred — CHF

347 *P. anderidae* (Fletch.) — Cors y Llyn NNR SJ0155 (**43**) mines on *Betula pubescens* 16.x.2009 — PJC, VFC, NRL & JRL

348 *P. quinqueguttella* (Staint.) — Hoy, Orkney HY2401 (**111**) 21.vi.2009 — KPB

352 *P. schreberella* (Fabr.) — Penpont SN9728 (**42**) mines on *Ulmus glabra* 15.x.2009 — JRL

358 *P. froelichiella* (Zell.) — Felindre Farchog SN100390 (**45**) mines on *Alnus glutinosa* 30.ix.2009 — J. Atkinson *per* ADL; Inverinan NN0017 (**98**) 1.iv.2001, det. MRY — A. Masterman *per* MRY

366a *Cameraria ohridella* Deschk. & Dim. — Crediton SS827004 (**4**) one mine on *Aesculus hippocastanum* 14.vii.2009 — S.D. Beavan *per* RJH; Friston Forest TV5499 (**14**) mines on *Aesculus* 10.ix.2008 — AMD & MSP; Hollinsclough SK0666 (**39**) vacated mines on *Aesculus hippocastanum* 9.ix.2009 — SHH; Preston Montford SJ4314 (**40**) mines on *Aesculus* 5.x.2008 — AMD; Breidden Hill SJ295149 (**47**) mines on *Aesculus* 6.viii.2009 — ANG & JEG *per* PRW; Llanbedr SH586268 (**48**) mines on *Aesculus* 22.viii.2009 – H. Bantock *per* ANG; Llangollen SJ213421 (**50**) mines on *Aesculus hippocastanum* 14.xi.2009 — JBH; Winkley Hall, nr. Clitheroe SD7038 (**60**) few mines on *Aesculus hippocastanum* 17.x.2009 — K. McCabe per SMP

367a *Phyllocnistis ramulicola* Langmaid & Corley — Havant Thicket SU7110 (11) mines and cocoons on *Populus tremula*, moths bred, previously unrecorded foodplant — JRL, *Ent. Rec.* **121**: 304

CHOREUTIDAE

387 *Prochoreutis sehestediana* (Fabr.) — Lower Prewley Moor SX541912 (**4**) 23.v.2009 — R. Wolton *per* RJH

GLYPHIPTERIGIDAE

392 *G. schoenicolella* Boyd — Hawes Water SD477768 (**60**) 2.vi.2009 — SMP

394 *G. forsterella* (Fabr.) — Bin Forest NJ4944 (**93**) 21.vi.2009 — MRY

397 *G. thrasonella* (Scop.) — Eaton Ford TL1760 (30) 2.vi.2009, genitalia det. DVM, first county record since VCH — A.A. Lawrence *per* DVM

YPONOMEUTIDAE

401 *Argyresthia laevigatella* (Heyden.) — Lineover Wood SO9819 (**33**) 29.vi.2009, genitalia det. — G.H.J. Meredith *per* RGG

403 *A. glabratella* (Zell.) — Lineover Wood SO9819 (**33**) 2.vii.2009, genitalia det. — G.H.J. Meredith *per* RGG

409a *A. trifasciata* Staud. — Birchy Barton Hill, Heavitree, Exeter SX949924 (**3**) 23.v.2009 det. RJH from photograph — G. Jarvis *per* RJH

409b *A. cupressella* Wals. — Maenporth SW7929 (**1**) 16.vi.2009 — G. Davis *per* LACT; Torpoint SX436547 (**2**) 1.vi.2009 — LACT; Zeal Monachorum SS719039 (**4**) 9 .vi.2009 — S.D. Beavan *per* RJH; Newhaven TQ458028 (**14**) 28.v.2009 — S. Teale *per* CRP; Dersingham TF687305 (**28**) 4.vi.2009 — R.E. Jones *per* JRW; Leighton Moss SD477749 (**60**) 14.vi.2009 — SMP

416 *A. glaucinella* Zell. — Week Wood, Chumleigh SS730165 (**4**) 27.vi.2009 — BPH; Bedworth Colliery Wood SP331876 (**38**) larval deeding signs on oak trunk 29.iii.2009 — M. Kennard *per* NJS

418 *A. conjugella* Zell. — Blencathra Field Centre NY303255 (**70**) 25.v.2009 — SHH

419 *A. semifusca* (Haw.) — Sangobeg NC426664 (**108**) 9.viii.2009 — SMP

422 *A. albistria* (Haw.) — Boat of Garten NH940184 (**95**) 17.viii.2009 — M. Taylor *per* MRY

423 *A. semitestacella* (Curtis) — Fulwood, Preston SD5332 (**60**) 17.viii.2009 — A. Powell *per* SMP

427 *Yponomeuta cagnagella* (Hübn.) — Boat of Garten NH940184 (**95**) 17.viii.2009 — M. Taylor *per* MRY; Maddockstown S560540 (**H11**) pupae on *Euonymus europaeus* 14.vi.2009, moths bred — KGMB

435 *Zelleria hepariella* Staint. — Stow Longa TL108709 (**31**) 25.vii.2009, genitalia det. — K. Royles per BD; Ninch O151712 (**H22**) 3.viii.2009 — EO'D

449 *Prays fraxinella* (Bjerk.) — Barna M243236 (**H16**) 24.vi.2009 — KGMB; Stamullen O146662 (**H22**) 5.viii.2009 — EO'D

449c *P. oleae* (Bernard) — Addlestone (TQ0565) (**17**) mines on olive in a garden centre 22.i.2009, moths bred, conf. M.R. Honey — A.R. Mitchell *per* JP

453 *Ypsolopha dentella* (Fabr.) — Boat of Garten NH940184 (**95**) 1.viii.2009 — M. Taylor *per* MRY

455 *Y. scabrella* (Linn.) — Llanfyllin SJ157210 (**47**) 16.viii.2009, det. PRW — M.D. Haigh, *per* PRW

459 *Y. sylvella* (Linn.) — East Winch Common TF698158 (28) 8.ix.2009, first VC record since 1884 — JC, *Ent. Rec.* **121**: 287; Glasbury SO180390 (**43**) 19.ix.2009 — PJC & VFC

461 *Y. ustella* (Cl.) — East Winch Common TF698158 (**28**) 8.ix.2009 — JC *et al.*

462 *Y. sequella* (Cl.) — Peebles NT2540 (**78**) 10.x.2009 — S. Kennedy *per* MRY; Byres Hill NT5076 (**82**) cocoons under bark of *Acer pseudoplatanus* 25.iv.2009 — KPB

464a *P. haasi* Staud. — Beinn Eighe (105) 5.vii.2009 five specimens seen and one retained as a voucher. Previously the species was known in the British Isles only from one specimen taken at Beinn Eighe on 11.vii.1954. In continental Europe known only from six localities, five in Norway and one in Sweden — RJH

465 *Plutella porrectella* (Linn.) — Tramore S578014 (**H6**) 7.v.2009 — TB

468 *Rhigognostis incarnatella* (Steud.) — Milngavie NS560745 (**99**) 1.iv.2009 — JK; Lamlash NS043323, Arran (**100**) 29.vi.2009 — NG

469 *Eidophasia messingiella* (F. v. R.) — Glasbury SO180390 (**43**) 28.vi.2009 ? PJC & VFC

476 *Acrolepia autumnitella* Curt. — Kilnsea TA4115 (**61**) 16.vii.2009, det. HEB — B.R. Spence *per* HEB; Cork City (Distillery Fields) W665720 (**H4**) tenanted mines on *Solanum dulcamara* 7.viii.2009 — KGMB & P. Strickland, **New to Ireland,** *Irish Naturalists' Journal* in press

LYONETIIDAE

254 *Leucoptera laburnella* (Staint.) — Drumshee NH913564 (**96**) 12.ix.2009 — P. Moore *per* MRY

260 *L. malifoliella* (Costa) — Llanstephan SO116419 (**43**) tenanted mines on *Crataegus* 25.vii.2009 — PJC & VFC; Teifi Marshes NNR SN18854526 (**45**) vacated mines on *Sorbus aucuparia* 12.ix. 2009, det. JRL from photograph — ADL

262 *Lyonetia prunifoliella* (Hübn.) — Lizard (**1**) 1.x.2009 — P. Kitchener, *Atropos* **39**: 73–74

263 *L. clerkella* (Linn.) — Elton SJ4575 (58) vacated mines on Cockspur Thorn *Crataegus crus-galli* 20.ix.2009, previously unpublished foodplant — M. Barlow & S. Holmes *per* SHH

COLEOPHORIDAE

490 *Coleophora lutipennella* (Zell.) — Penybryn SN180430 (**45**) 9.vii.2009, genitalia det. MSP — R. Gill *per* ADL

491 *C. gryphipennella* (Hübn.) — Tramore Burrow S617004 (**H6**) 31.v.2007, genitalia det. KGMB — TB

496a *C. adjectella* H.-S. — Hunthouse Wood SO70427010 (**37**) 3.vii.2009 — P. Clements *per* ANBS

502 *C. trigeminella* Fuchs — Beechenhurst SO6113 (**34**) 24.vi.2009, genitalia det. — G.H.J. Meredith *per* RGG; Black Hill Quarry SO76994114 (**37**) 28.vi.2009, genitalia det. — PC, ANBS *et al.*

504 *C. lusciniaepennella* (Treits.) — Ffynnon Gynydd SO161409 (**43**) case on *Salix* sp. 4.xi.2009 — PJC & VFC

513 *C. potentillae* Elisha — Wilmcote Rough SP15335834 (**38**) larval case on *Rubus fruticosus* 5.x.2009 — M. Kennard *per* NJS

520 *C. fuscicornis* Zell. — Bradwell on Sea TM030086 (**18**) 6.vi.2009 — AC

526 *C. laricella* (Hübn.) — Boblainey NH482398 (**96**) 24.vi.2009 — P. Chapman *per* MRY

532 *C. albidella* ([D. & S.]) — Ebernoe Common SU9727 (**13**) 13.vi.2009, male genitalia det. — AMD; Graig Upper R660117 (**H5**) 22.vi.2009, male genitalia det. — KGMB

535 *C. ibipennella* (Zell.) — Willen SP8741 (**24**) 9.vii.1995, det. DVM — G. Higgs *per* MVA; Swindon Village SO9225 (**33**) case on *Quercus* seedling 3.ix.2009 — R. Homan *per* RGG

544 *C. albicosta* (Haw.) — Barna M243236 (**H16**) 24.vi.2009 — KGMB

545 *C. saturatella* Staint. — Ash Ranges, Pirbright SU9253 (17) 3.vii.2009, larval cases on *Cytisus*, first county record since VCH — GAC & C.W. Stanworth

547 *C. discordella* Zell. — Llanelwedd Old Quarry SO051520 (**43**) 2.vi.2009, genitalia det. PJC — PJC & VFC

555 *C. follicularis* (Vallot) — Tramore Burrow S617004 (**H6**) 5.vii.2006, genitalia det. KGMB — TB

556 *C. trochilella* (Dup.) — Hillesden SP6727 (**24**) 23.vii.2009, male genitalia det. PRH — M. Botham *per* MVA

566 *C. sternipennella* Zett. — Spurn TA4115 (**61**) 4-18.viii.2009, genitalia det. — B.R. Spence *per* HEB

568 *C. versurella* Zell. — Weston-super-Mare ST3261 (**6**) 6.ix.09 — DJLA; Ardivachar NF7445 (**110**) 23.vii.2009, genitalia det. MRY — C. Johnson *per* MRY; Tramore S578014 (**H6**) 2.vii.2007, genitalia det. KGMB — TB

552 *C. lassella* Staud. — Stoke Common SU9885 (**24**) 5.viii.2009, genitalia det. — MVA & PRH; Ipswich Golf Course TM208432 (**25**) 6.viii.2009, genitalia det. JC — N. Sherman *per* JC

583 *C. tamesis* Waters — Edgehills SO6615 (**34**) case on *Juncus articulatus* 18.viii.2009 — G.H.J. Meredith *per* RGG; Cors y Llyn NNR SJ0155 (**43**) cases on *Juncus articulatus* 16.x.2009 — PJC, VFC, NRL & JRL

587 *C. caespititiella* Zell. — Tramore S578014 (**H6**) 12.vi.2006, genitalia det. KGMB — TB

ELACHISTIDAE

600 *Elachista luticomella* Zell. — Ninch O151712 (**H22**) 27.vi.2009 — EO'D

601a *E. nobilella* Zell. — Bramshott Common SU8633 (**12**) two vacated mines on *Deschampsia flexuosa* — JRL & GAC

607 *E. canapennella* (Hübn.) — Tramore S578014 (**H6**) 1.vi.2006, genitalia det. KGMB — TB

609 *E. maculicerusella* Bruand — Kilpaison Marshes SM8901 (**45**) 24.vii.2009 — North Pembs Moth Group *per* ADL

611 *E. triatomea* (Haw.) — Tramore saltmarsh S599009 (**H6**) 2.vii.2009 — TB

614 *E. triseriatella* Staint. — Contrary Head SC2382 (**71**) 20.vi.2009, genitalia det. — SMP

618 *E. cingillella* (H.- S.) — Gait Barrows SD4877 (**60**) 13.v.2000, genitalia det. JRL from photograph — SMP

620 *E. gangabella* Zell. — Cwm Rhigian SN 034393 (**45**) tenanted mines on *Brachypodium sylvaticum* 17.x.2009 — ADL

629 *Biselachista utonella* (Frey) — Earith TL390751 (**31**) 1.vii.2009, genitalia det. BD — D. Griffiths per BD; Hutton Conyers SE3273 (**65**) 6.viii.2009, det HEB — CHF

OECOPHORIDAE

644 *Borkhausenia fuscescens* (Haw.) — Llanfyllin SJ157210 (**47**) indoors 4.vii.2009, det. PRW — M.D. Haigh *per* PRW

646 *Telechrysis tripuncta* (Haw.) — Zeal Monachorum SS718029 (**4**) one flying early evening 5.vi.2009 — S.D. Beavan *per* RJH

653 *Aplota palpella* (Haw.) — Pheasant Copse SU9524 (**13**) one at MV light 21.vii.2006 — AMD

656 *Tachystola acroxantha* (Meyr.) — Sawbridgeworth Marsh TL4915 (**20**) 22.v.2009 — CWP; Thrapston TL0078 (**32**) 12.vi.2009 — M. Hammond *per* DVM; Tynemouth NZ364705 (**67**) 22.vi.2009 & 4.viii.2009 — TJT

658 *Carcina quercana* (Fabr.) — Dunkeld NO034425 (**89**) 14.v.2009 — P.Brooks *per* JET; Poulaweala Creek R294531 (**H8**) 25.vii.2009 — KGMB

659 *Amphisbatis incongruella* (Staint.) — Porth Diana NR SH254780 (**52**) larval cases 8.viii.2007, det. JRL from photograph — J. Bratton *per* IFS; Kielder Forest NY632933 (**67**) 28.v.2009 — TJT & K. Dover

660 *Pseudatemelia josephinae* (Toll) — Week Wood, Chumleigh SS730165 (**4**) 27.vi.2009 — BPH

661 *P. flavifrontella* ([D. & S.]) — Monks Wood TL200797 (**31**) 30.v.2008, genitalia det. —S K. Royles *per* BD

667 *Semioscopis steinkellneriana* ([D. & S.]) — Killiecrankie NN903636 (**89**) 1-22.iv.2009, det. MRY — JET

668 *Luquetia lobella* ([D. & S.]) — Woodnewton TL0394 (**32**) 2.vi.2009 — N. Smith *per* DVM

673 *Depressaria pimpinellae* (Zell.) — Pilning ST5584 (**34**) 12.vi.2009, genitalia det. M. Bailey — J.P. Martin *per* RGG

676 *D. pulcherrimella* Staint. — Llangynidr SO1520 (**42**) 2.viii.2009, genitalia det. — JRL; South Glendale NF7914 (**110**) viii.2009, det. MRY from photograph — J. Kemp *per* MRY

678 *D. sordidatella* Tengst. — Hillesden SP6830 (**24**) 21.vii.2009, male genitalia det. PRH — M. Botham *per* MVA

691 *Agonopterix purpurea* (Haw.) — Westmead, Bowness-on-Solway NY207618 (**70**) 3.v.2008 — E. Still *per* MRY

692 *A. subpropinquella* (Staint.) — near Cliad NM2161, Coll (**103**) several larvae in spun leaves of *Cirsium arvense* 25.vi.2009, moths bred — RJH; South Glendale NF7914 (**110**) viii.2009, det. MRY from photograph — J. Kemp *per* MRY

695 *A. alstromeriana* (Cl.) — Llanfyllin SJ157210 (**47**) 1.xi.2009, det. PRW — M.D. Haigh *per* PRW

701 *A. ocellana* (Fabr.) — Caolas-an-eilean NM223558, Coll (**103**) a few larvae in spun leaves of *Salix aurita* 30.vi.2009, moths bred — RJH

703 *A. atomella* ([D. & S.]) — Merryfield Airfield ST3318 (**5**) larvae on *Genista tinctoria* 31.v.2009, moths bred — JAMcG

706 *A. nervosa* (Haw.) — Poulaweala Creek R293529 (**H8**) 25.vii.2009 — KGMB

710 *A. conterminella* (Zell.) — Aberdeen NJ920 (**91**) 31.vii.2009, det. MRY — B. Stewart *per* MRY

ETHMIIDAE

718 *Ethmia dodecea* (Haw.) — Abberton SO995535 (**37**) six at mv light 27.vi – 10.vii.2009 — G. Peplow *per* ANBS

722 *E. pyrausta* (Pall.) — NW of Cairnwell NO1277 (**89**) single larva on *Thalictrum alpina* 21.vii.2009 — KPB

GELECHIIDAE

725 *Metzneria aestivella* (Zell.) — Tramore Burrow S617004 (**H6**) 9.vii.2009 — TB

734 *Argolamprotes micella* ([D. & S.]) — Lower Woods ST7487 (**34**) 4.vii.2009 — P. Cranswick and P.D.J. Hugo *per* RGG

736 *Monochroa lucidella* (Steph.) — Wrexham Industrial Estate SJ381489 (**50**) 30.vi.2009 — ANG *per* BF

740a *M. niphognatha* (Gozm.) — Portsmouth SU6700 (**11**) 29.vi.2009 — IRT

742 *M. lutulentella* (Zell.) — Westcott SP7117 (**24**) 3.vii.2007, male genitalia det. PRH — D. Wilton *per* MVA

779 *Bryotropha affinis* (Haw.) — Tongue NC589567 (**108**) 15.vi.2009 — DWWD

789 *B. domestica* (Haw.) — Inchmarlo NO6796 (**91**) 30.vii.2009 — C. Holmes *per* MRY

760 *Exoteleia dodecella* (Linn.) — Barna M243236 (**H16**) 24.vi.2009 — KGMB

768 *Carpatolechia notatella* (Hübn.) — Rushbeds Wood SP6715 (**24**) 21.v.2008, female genitalia det. PRH — D. Wilton *per* MVA

776 *Teleiopsis diffinis* (Haw.) — St Catherine's Down SZ494769 (**10**) 19.ix.2009, det. BE — T.J. Norriss, *Ent. Rec.* **122**: 5

790 *Chionodes fumatella* (Dougl.) — Nuneaton, Judkin's Quarry SP34409337 (**38**) 5.viii.2009 genitalia det. — M. Kennard *per* NJS; Morben Camp Site, Nr. Machynlleth SN706987 (**47**) 14.viii.2009 — PRW & M.D. Haigh

791 *C. distinctella* (Zell.) — Canford Heath SZ0195 (9) two 28.vii.2004, genitalia det., first VC records since 1910s — MSP *per* PHS

792 *Mirificarma mulinella* (Zell.) — Poulaweala Creek R293529 (**H8**) 25.vii.2009 — KGMB

796 *Aroga velocella* (Zell.) — Barnack Hills and Holes TF0704 (**32**) 13.v.2009 — KPB *per* DVM

799 *Neofriseria singula* (Staud.) — Reigate Heath TQ2350 (**17**) 23.vi.2009, adult at mv light, genitalia det. — GAC

801a *Gelechia senticetella* (Staud.) — Cheltenham SO9424 (**33**) 24.vii.2009 — R. Homan *per* RGG

804 *G. cuneatella* Dougl. — Leighton Moss SD477749 (**60**) 21.ix.2009, genitalia det. — SMP

811 *Scrobipalpa samadensis* (Pfaff.) — Mornington saltmarsh O1476 (**H22**) 8.viii.2009, genitalia det. KGMB — EO'D

812 *S. instabilella* (Dougl.) — Mornington saltmarsh O1486 (**H22**) 8.viii.2009, genitalia det. KGMB — EO'D

818 *S. atriplicella* (F. v. R.) — Hillesden SP6928 (**24**) 25.v.2009, female genitalia det. PRH — M. Botham *per* MVA; Cheltenham SO9515 (**33**) 25.v.2009, genitalia det. — G.H.J. Meredith *per* RGG

819 *S. costella* (H. & W.) — King's Muir, Peebles NT2539 (**78**) larvae on *Solanum dulcamara* 18.vii.2009, moths bred — KPB; Oldmeldrum NJ823279 (**93**) 6.vii.2009 — MRY

825a *Tuta absoluta* (Meyr.) — Cheltenham (**33**) larva mining the skin of a tomato imported from Spain 20.xii.2009, moth bred — R. Homan, *Ent. Rec.* **122**: 31-32; Recorded from 7 fruit packing stations and 2 tomato production sites in Yorkshire from 2.iii.2009 to the year end. Localities not stated but include 'North, West, East & South Yorkshire' according to The Food and Environment Research Agency, Sand Hutton, so will involve vice-counties **61** & **63** and possibly 62. — HEB; **Adventive species new to the British Isles**

845 *Syncopacma sangiella* (Staint.) — Aughinish East R284527 (**H8**) 24.vii.2009 — M. Murphy *per* KGMB

850 *S. polychromella* (Rebel) — Burton, Christchurch SZ1694 (**11**) 24.v.2009, det. JRL from photograph — J. Southworth *per* MJW; Sandy Point, Hayling Island (**11**) 24.v.2009, det. N. Montegriffo — A. Johnson *per* MJW; Tramore S578014 (**H6**) 30.v.2009, conf. KGMB — TB, **New to Ireland,** *Ent. Rec.* **121**: 263

854 *Anacampsis blattariella* (Hübn.) — Llanstephan SO108423 (**43**) larva on *Betula* 23.v.2009, moth bred, det. VFC — PJC, VFC & JRL

857 *Anarsia lineatella* Zell. — Northward Hill TQ7876 (**16**) one at MV light 8.vii.2009 — AMD

868 *Helcystogramma rufescens* (Haw.) — Cors Dyfi Nature Reserve SN701984 (**47**) 25.vii.2009, genitalia det. CWP — Montgomeryshire Moth Group, PRW, CWP & M.D. Haigh

AUTOSTICHIDAE

870 *Oegoconia quadripuncta* (Haw.) — Tynemouth NZ364705 (**67**) 6.viii.2009, genitalia det. — TJT; Priory Park, Belfast (**H39**) J311699 15.vii.2009, genitalia det. JC — C. Mellon *per* ER

BLASTOBASIDAE

874 *Blastobasis lacticolella* Rebel — Blencathra Field Centre NY303255 (**70**) 25.v.2009 — SHH; Taynuilt NN017319 (**98**) 31.v.2009 — C. Farmer *per* MRY

874a *B. vittata* (Woll.) — Sandy Point, Hayling Island SZ7498 (**11**) 10.ix.2009 — BE; Walberton SU9606 (**13**) 26.viii.2009 — J.T. Radford *per* RMP; Lindfield TQ348248 (**14**) 15.xi.2008, genitalia prep MRH, det. O. Karsholt from photographs — RWF, **New to the British Isles**

875a *B. rebeli* Karsholt & Sinev — Basingstoke SU6153 (**12**) 6.x.2009 — MJW

BATRACHEDRIDAE

878 *Batrachedra praeangusta* (Haw.) — Glasbury SO180390 (**43**) 8.vii.2009, genitalia det. PJC — PJC & VFC

879 *B. pinicolella* (Zell.) — Lightfoot Green SD513333 (**60**) 4.vii.2009, genitalia det. — SMP

MOMPHIDAE

880 *Mompha langiella* (Hübn.) — Combley Great Wood SZ5488 (**10**) mines, some with larvae, on *Circaea lutetiana* 16.viii.2009 — DTB

881 *M. terminella* (H. & W.) — Ayr Gorge NS4525 (**75**) vacated mines on *Circaea lutetiana* 1.viii.2009 — SEM *per* KPB, **New to Scotland**

882 *M. locupletella* ([D. & S.]) — Bowness NY207618 (**70**) 30.vi.2009 — E. Still *per* MRY; Caldale, Orkney HY4109 (**111**) 20.vi.2009 — KPB

886 *M. ochraceella* (Curt.) — Westmead, Bowness-on-Solway NY207618 (**70**) 30.vi.2008 — E. Still *per* MRY

887 *M. lacteella* (Steph.) — Llangynidr SO1520 (**42**) 8.vi.2009, male genitalia det. — JRL

890 *M. jurassicella* (Frey) — Sharpthorne TQ 374325 (**14**) 30.iii.2009, genitalia det. MSP — PC; Bromham TL0050 (**30**) indoors 30.x.2009, genitalia det. DVM — P. Almond *per* DVM

892 *M. subbistrigella* (Haw.) — Tramore S578014 (**H6**) 7.vi.2006, genitalia det. KGMB — TB

COSMOPTERIGIDAE

894 *Cosmopterix zieglerella* (Hübn.) — Rugeley SK045168 (**39**) vacated mines on *Humulus* 1.x.2009 — JC, *Ent. Rec.* **122**: 42

898 *Limnaecia phragmitella* Staint. — Derrygreenagh S234673 (**H11**) larva in *Typha* seedhead 30.v.2009 — KGMB; Heathlawn Bog M827110 (**H15**) larva in *Typha* seedhead 25.iii.2009 — KGMB;

900 *Pancalia schwarzella* (Fabr.) — Braunton Burrows SS4534 (4) 12.vii.2008 larvae on *Viola hirta* and *V. canina*, 12 — 26.vii.2008, moths emerged 12-14.iii.2009, genitalia det. RJH, and more small larvae on *V. canina* 24.v.2009 — S.D. Beavan & RJH, First record of the larva in England; near Tràigh Gharbh NM2262, Coll (**103**) larvae locally common on *Viola canina* 27.vi.2009, moth emerged 8.iii.2010 — RJH

904 *Spuleria flavicaput* (Haw.) — Locks Park Farm, Hatherleigh SS514023 (**4**) 24.v.2009 — R. Wolton *per* RJH

905 *Blastodacna hellerella* (Dup.) — Oldmeldrum NJ823279 (**93**) 4.vii.2009 — MRY; Barna M243236 (**H16**) 24.vi.2009 — KGMB

906 *B. atra* (Haw.) — Glasbury SO180390 (**43**) 4.vii.2009, genitalia det. VFC — PJC & VFC

908 *Sorhagenia rhamniella* (Zell.) — Kingley Vale SU8210 (**13**) one male and one female at MV light 4.viii.2009, genitalia det. — AMD

909 *S. lophyrella* (Dougl.) — Kingley Vale SU8210 (**13**) one male at MV light 1.vii.2009, genitalia det. — AMD

SCYTHRIDIDAE

911 *Scythris grandipennis* (Haw.) — Contrary Head SC2382 (**71**) 20.vi.2009, genitalia det. — SMP

915 *S. picaepennis* (Haw.) — Llanelwedd Old Quarry SO051520 (**43**) 2.vi.2009, genitalia det. PJC — PJC & VFC

920a *S. inspersella* (Hübn.) — Tunstall Common TM3754 (**25**) larvae on *Chamerion angustifolium* 20.vi.2009, moths bred — AWP, *Ent. Rec.* **121**: 166

TORTRICIDAE

921 *Phtheochroa inopiana* (Haw.) — Chorleywood TQ0296 (**24**) 25.v.2006, det. CWP — R. Ellis *per* MVA

924 *Hysterophora maculosana* (Haw.) — Fron Wood, Llowes SO191420 (**43**) 24.v.2009, genitalia det. VFC — PJC & VFC

926 *Phalonidia manniana* (F. v. R.) — Abington Meadows SP7960 (**32**) 10.vii.2009, det. DVM — J. Skinner *per* DVM; Tramore S578014 (**H6**) 22.vi.2009 — TB

933 *P. gilvicomana* (Zell.) — Hen Wood SU6522 (**11**) larvae in seedheads of *Mycelis muralis* 13.viii.2009 — JRL & R.J. Dickson

928 *Gynnidomorpha permixtana* ([D. & S.]) — dunes near Tràigh Hogh NM1696957023 Coll (**103**) 29.vi.2009, genitalia det. — RJH

938 *Agapeta zoegana* (Linn.) — Aberedw SO080473 (**43**) 20.vi.2009, genitalia det. PJC — S. Bigglestone *per* PJC

942 *Aethes piercei* Obraz. — Cloghanenagleragh Q955234 (**H2**) 26.vi.2009 — KGMB

945 *A. cnicana* (Westw.) — Charlesfield W395921 (**H4**) 22.vi.2009 — KGMB; Tramore S578014 (**H6**) 24.vi.2009 — TB

963 *Cochylis flaviciliana* (Westw.) — Spurn TA4115 (**61**) 25.vii.2009, genitalia det. — B.R. Spence *per* HEB

964a *C. molliculana* (Zell.) — Pilning ST5584 (**34**) 19.viii.2009, genitalia det. M. Bailey — J.P. Martin *per* RGG

970 *Pandemis cerasana* (Hübn.) — Stamullen O146662 (**H22**) 2.vii.2009 — EO'D

974 *Argyrotaenia ljungiana* (Thunb.) — Cheltenham SO9424 (**33**) larva 24.viii.2009 in nectarine imported from Italy, moth bred, det. MFVC from photograph — R. Homan *per* RGG

981 *Archips rosana* (Linn.) — Tramore Burrow S617004 (**H6**) 9.vii.2009 — TB

987 *Ptycholomoides aeriferanus* (H.-S.) — Week Wood, Chumleigh SS730165 (**4**) 27.vi.2009 — BPH

989 *Aphelia paleana* (Hübn.) — Tomonie NN106767 (**97**) 20.vi.2009 — T. Prescott *per* MRY; Castlegannon Quarry S545306 (**H11**) 13.vi.2009 — KGMB

991 *Clepsis senecionana* (Hübn.) — Derrygreenagh S234673 (**H11**) 30.v.2009 — KGMB

994 *C. consimilana* (Hübn.) — Tramore S578014 (**H6**) 26.vi.2009 — TB

998 *Epiphyas postvittana* (Walk.) — Ayr NS3322 (**75**) larvae on *Rosmarinus* 2.viii.2008, moths bred — MRY; Tromie Meadow NN787995 (**96**) 24.viii.2007, det. MRY — P. Moore *per* MRY

1007 *Capua vulgana* (Fröl.) — Knockmaa M360484 (**H17**) 1.vi.2009 — KGMB

1009 *Philedonides lunana* (Thunb.) — Glascwm SO142534 (**43**) 12.iv.2009 — PJC & VFC

1011 *Pseudargyrotoza conwagana* (Fabr.) — Ninch O151712 (**H22**) 3.viii.2009 — EO'D

1016 *Cnephasia longana* (Haw.) — Coombs Quarry SP7332 (**24**) 24.vii.2004 — MVA & PRH; Hall Green SP1047892 (**37**) 21.vii.2009 — A. Prior *per* ANBS

1022a *C. pumicana* (Zell.) — Catherington SU695152 (**11**) 14.vii.2005, genitalia det. — RJM; Greywell (**12**) 23.vii.2004, genitalia det. MJW — P. Boswell; Walberton (**13**) 21.vii.1996, genitalia det. RMP — J.T. Radford; New Romney (**15**) 15.vii.1999, genitalia det. RMP — S.P. Clancy; Gravesend (**16**) vi.2004, genitalia det. — DJLA; East Ham (**18**) 8.viii.1986, genitalia det. — CWP; Daws Hall, Lamarsh (**19**) 20.vii.1996, genitalia det. — B. Goodey; Harpenden (**20**) 3.viii.2002, genitalia det. — B. Goodey; Buckingham SP6930 (**24**) 24.vii.2009, genitalia det. PRH — M. Botham; Ipswich Golf Course (**25**) 11.vii.2004, genitalia det. JC — N. Sherman; Morston Marshes (**27**) 17.vii.2004, genitalia det. — JC; Sculthorpe Moor (**28**) 19.vii.2006, genitalia det. — JC, **New to the British List**

1023 *C. genitalana* P. & M. — Sidlesham SZ8697 and Rewell Wood SU9807 (**13**) one at each locality 27.vii.2004, genitalia of both det. — JRL & MRY; Spurn & Kilnsea TA4115 **(61)** many 20.vii-26.viii.2009, genitalia det. — B. R. Spence *per* HEB; Sharow SE3271 (**64**) 5.viii.2009, genitalia det. CHF — J.C. Warwick; Hutton Conyers SE3273 (**65**) 9.viii.2009, genitalia det. — CHF

1024 *C. incertana* (Treits.) — Great Newtown Head X569989 **(H6)** 6.vi.2007, genitalia det. KGMB — TB

1033 *Tortrix viridana* (Linn.) — Stamullen O146662 (**H22**) 23.vi.2009 — EO'D

1034 *Spatalistis bifasciana* (Hübn.) — Tyrrel's Wood TM205895 (**27**) 18.vii.2009, det. JC — Norfolk Moth Group

1036 *Acleris forsskaleana* (Linn.) — Aberdeen NJ920 (**91**) 31.vii.2009, det. MRY — B. Stewart *per* MRY; Tramore S578014 **(H6)** 13.viii.2009 — TB

1040 *A. caledoniana* (Steph.) — Glaslyn Nature Reserve SN828942 (**47**) 8.viii.2009 — PRW & Montgomeryshire Moth Group

1044 *A. ferrugana* ([D. & S.]) — Hutton Conyers SE3273 (**65**) 21.ii.2009, genitalia det. — CHF

1051 *A. logiana* (Cl.) — Great Trethew SX287600 (**2**) 13.xi 2009 — J.Nicholls *per* LACT; Beckley Woods TQ8521 (**14**) three at MV light 7.vii.2007 — AMD; Buckingham Palace Garden TQ2879 (**21**) 2.vii.2009 — THF; Marlow Bottom SU8489 (**24**) 5.xi.2009, male genitalia det. PRH – A. Bassett *per* MVA; Flitwick Moor TL0435 (**30**) 5.vii.2009, genitalia det. DVM — A.M. & M.G. Banthorpe *per* DVM

1052 *A. umbrana* (Hübn.) — Gait Barrows SD483774 (**60**) 22.iv.2009 — B. Hancock & R. Petley-Jones *per* SMP

1055 *A. hyemana* (Haw.) — Aberedw Rocks SO0846 (**43**) 11.iv.2009 — PJC & VFC

1062a *A. effractana* (Hübn.) — Druidibeag NF7938 (**110**) 8.viii.2009, genitalia det. MRY — C. Johnson *per* MRY

1013 *Olindia schumacherana* (Fabr.) — Ruttle Wood NH476419 (**96**) 22.vi.2009, det. MRY — R. Kiddie *per* MRY

1067 *Celypha cespitana* (Hübn.) — North Cliffe Wood SE8637 (**61**) 26.vi.2009, det. HEB — M. Coverdale *et al. per* HEB

1075 *Olethreutes micana* ([D. & S.]) = *olivana* (Treits.) — Cloghanenagleragh Q955234 (**H2**) 26.vi.2009, male genitalia det. — KGMB

1080a *Cymolomia hartigiana* (Saxesen) — Bawdsey Manor Estate TM337379 (**25**) 17.vii.2007, genitalia det. JC — M.J. Deans, *Ent. Rec.* **122**: 8-11, **New to the British Isles**

1086 *Hedya salicella* (Linn.) — Kilpaison Marshes SM8901 (**45**) 24.vii.2009 — North Pembs Moth Group *per* ADL

1089 *Apotomis semifasciana* (Haw.) — Cors Dyfi Nature Reserve SN700984 (**47**) 25.vii.2009 — Montgomeryshire Moth Group, PRW, CWP & M.D. Haigh

1096 *A. sauciana* (Fröl.) — Week Wood, Chumleigh SS730165 (**4**) 27.vi.2009 — BPH

1098 *Endothenia oblongana* (Haw.) — Heybrook Bay SX4948 (3) 11.x.2008 larva in rootstock of *Plantago lanceolata*, moth emerged 24.iv.2009. British literature suggests that the larva feeds on *Centaurea nigra*, possibly in the flower head, but this may be due to confusion with 1099 *E. marginana*. This is probably the first time that the larva has been found in the British Isles — RJH

1099 *E. marginana* (Haw.) — Ledsham SE4529 (**64**) 14.viii.2009 — J.T. Radford *per* HEB

1101 *E. ustulana* (Haw.) — Cappoquin X09 (**H6**) three in JJFX King coll., Hunterian Museum, Glasgow, vii-viii.1902 — KGMB, *Irish Naturalists' Journal* in press, **New to Ireland**

1104 *E. quadrimaculana* (Haw.) — Eshott (South Farm) NZ2197 (**67**) 6.vii.2009 — M.S. Hodgson *per* TJT

1106 *Lobesia reliquana* (Hübn.) — Harlestone Heath SP7164 (**32**) 8.vi.2009 — P. Sharpe *per* DVM

1110 *Bactra furfurana* (Haw.) — Lavistown S541544 (**H11**) 13.vi.2009 — KGMB

1111a *B. lacteana* (Caradja) — Cors Dyfi Nature Reserve SN702983 (**47**) 25.vii.2009, genitalia det. CWP — Montgomeryshire Moth Group, PRW, CWP & M.D. Haigh

1112 *B. robustana* (Christ.) — Sculthorpe Moor TF902302 (**28**) 11.vii.2009, genitalia det., first confirmed county record — JC

1114 *Eudemis porphyrana* (Hübn.) — Short Wood TL0191 (**32**) 31.vii.2009, genitalia det. DVM — J. Skinner *per* DVM

1115 *Ancylis achatana* ([D. & S.]) — Marsland SS230172 (**2**) 23.vi. 2009 — S. Ogden *per* LACT

1117 *A. unguicella* (Linn.) — Totland SZ328860 (**10**) 22.vi.2009, det. BE — SAK-J; Tulloch Moor (96) larvae on *Arctostaphylos uva-ursi* 20.ix.2005, moths bred, previously unrecorded foodplant — RJH, *Ent. Gaz.* **60**: 153–154

1119a *A. diminutana* (Haw.) — Finemere Wood SP7121 (**24**) 7.vi.2006, male genitalia det. PRH — D. Wilton *per* MVA; Teifi Marshes NNR SN189451 (**45**) 12.vi.2009 — R. Dobbins; Maes yr Haf, Newport SN05713896 (**45**) 12.vi.2009 — ADL

1121 *A. upupana* (Treits.) — Sherwood Forest SK 626 683 (**56**) 30.v.2009 — TP

1122 *A. obtusana* (Haw.) — Gait Barrows SD481773 (**60**) 9.vi.2009 — S. Tomlinson *per* SMP

1128 *A. myrtillana* (Treits.) — Derrygoolin South R698921 (**H15**) 1.vi.2009 — KGMB

1130 *Epinotia pygmaeana* (Hübn.) — Graig Upper R661128 (**H5**) 13.iv.2009 — KGMB, **New to Ireland**, *Ent. Gaz.* **61**: 104

1133 *E. bilunana* (Haw.) — Stichill NT713382 (**80**) vi.2009 — D. Ogsten *per* MRY

1135 *E. demarniana* (F. v. R.) — Pillmoor Wood SE4673 (**62**) 26.vi.2009, det. HEB — T. Box *per* HEB

1137 *E. tetraquetrana* (Haw.) — Breidden Hill SJ304144 (**47**) 6.viii.2009 — ANG & JEG *per* PRW

1142 *E. tedella* (Cl.) — Charlesfield W395921 (**H4**) 22.vi.2009 — KGMB; Carrickavrantry S554029 (**H6**) 3.vi.2009 — TB

1144 *E. signatana* (Dougl.) — Traethdy, Harlech SH574301 (**48**) 27.vi.2009, genitalia det. ANG — H. Bantock *per* ANG

1159 *Rhopobota naevana* (Hübn.) — Stamullen O146662 (**H22**) 21.vii.2009 — EO'D

1162 *R. myrtillana* (H. & W.) — Llannerch, Elan SN901616 (**43**) 14.vi.2009, genitalia det. PJC — PJC & VFC; Portlethen Moss NO912964 (**91**) 6.vi.2009 — N.A. Littlewood *per* MRY; Abernethy NJ0215 (**96**) vi.2009, det. MRY — P. Moore *per* MRY

1166 *Zeiraphera griseana* (Hübn.) — The Argory H8753 (**H37**) 7.vii.2002, genitalia det. JC — K. Murphy *per* JC

1170 *Gypsonoma oppressana* (Treits.) — Lund SE 9848 (**61**) two 30.vi.2009, conf. HEB — M. Coverdale *per* HEB

1174 *Epiblema cynosbatella* (Linn.) — Lavistown House S544543 (**H11**) 14.vi.2009 — KGMB

1175 *E. uddmanniana* (Linn.) — Barna M243236 (**H16**) 24.vi.2009 — KGMB

1176 *E. trimaculana* (Haw.) — Glasbury SO180390 (**43**) 23.v.2009, genitalia det. PJC — PJC & VFC

1184a *E. cirsiana* (Zell.) — Graig Upper R658117 (**H5**) 30.v.2009, female genitalia det. — KGMB

1186 *E. sticticana* (Fabr.) — Llanelwedd Old Quarry SO047524 (**43**) 29.v.2009, genitalia det. VFC — PJC & VFC

1187 *E. costipunctana* (Haw.) — Castlegannon Quarry S545306 (**H11**) 13.vi.2009 — KGMB

1196 *Eucosma metzneriana* (Treits.) — Kingsthorpe SP7463 (**32**) 22.6.2009 — P. Sharpe *per* DVM

1205 *Spilonota ocellana* ([D. & S.]) — Oldmeldrum NJ823279 (**93**) 4.vii.2009 — MRY; Staumullen O146662 (**H22**) 10.vii.2009 — EO'D

1205a *S. laricana* (Hein.) — Boblainey NH482398 (**96**) 24.vi.2009 — P. Chapman *per* MRY

1209 *Pseudococcyx turionella* (Linn.) — Lower Woods ST7386 (**34**) 9.v.2009, genitalia det. — G.H.J. Meredith *per* RGG

1210 *Rhyacionia buoliana* ([D. & S.]) — Hempsted SO8218 (**33**) 28.vi.2009 — G.R. Avery *per* RGG

1221 *Strophedra weirana* (Dougl.) — Calke Park, Ticknall SK32R (**57**) 25.x.2008 — A. Finch, *per* D. Budworth, *per* SHH; Great Midgel Moss, Delamere SJ539712 (**58**) 22.vi.2009, genitalia det. — SHH

1227 *Pammene giganteana* (Peyer.) — Warnham TQ1632 (**13**) 15.iv.2007, det. AMD — S. Bayley

1229 *P. albuginana* (Guen.) — Black Park TQ0184 (**24**) 23.v.2009, male genitalia det. R. Terry — D. Howdon, A. Culshaw & F. Barclay *per* MVA

1236 *P. fasciana* (Linn.) — Ruttle Wood NH475419 (**96**) 22.vi.2009 — M. Dean *per* MRY

1237 *P. germmana* (Hübn.) — Aughinlig H8750 (**H37**) 19.vi.2009, genitalia det. JC — K. Murphy *per* ER, **New to Ireland**

1239 *P. rhediella* (Cl.) — Glasbury SO180390 (**43**) 28.v.2009, genitalia det. PJC — PJC & VFC

1240 *Grapholita caecana* (Schläg.) — Totternhoe Quarry SP9822 (**30**) 2.vi.2009, det. DVM — D. Withers *per* DVM

1241 *G. compositella* (Fabr.) — Darren Wood, Llanstephan SO110428 (**43**) 4.vi.2009 — PJC & VFC; by roadside NM154542, Coll (**103**) 26.vi.2009 — RJH

1245 *G. janthinana* (Dup.) — Westmead, Bowness-on-Solway NY207618 (**70**) 13.vii.2008 — E. Still *per* MRY

1247 *G. funebrana* (Treits.) — Aughinlig H8750 (**H37**) 21.vii.2009, genitalia det. JC — K. Murphy *per* ER

1249 *G. lobarzewskii* (Nowicki) — Kenilworth SP286711 (**38**) 16.vi.2009, genitalia det. — M. Kennard *per* NJS

1250 *G. lathyrana* (Hübn.) — Merryfield Airport ST3319 (**5**) 5.iv.2009 — JAMcG & W. Urwin

1251 *G. jungiella* (Cl.) — Gordon Moss NT636425 (**81**) 1.vi.2009 — I. Cowe *per* MRY; Archieston NJ236441 (**95**) 21.v.2009 — M. Taylor *per* MRY

1220 *Cydia microgrammana* (Guen.) — Tramore Burrow S614005 (**H6**) 18.vi.2005, genitalia det. KGMB — TB

1259 *C. fagiglandana* (Zell.) — Coed Lletywalter SH601275 (**48**) 24.viii.2007, genitalia det. ANG — J. Hicks & H. Bantock *per* ANG

1260 *C. splendana* (Hübn.) — Auchincruive NS3823 (**75**) 2.viii.2009 — SEM *per* KPB; The Argory H8753 (**H37**) 11.ix.2009, genitalia det. JC — K. Murphy *per* ER

1263 *C. inquinatana* (Hübn.) — Minsmere RSPB TM4767 (**25**) 13.vi.2009, female genitalia det. JBH — JBH, R.M. Harvey & S. Read

1273 *Dichrorampha petiverella* Linnaeus, 1758 — Cwm Byddog RWT Reserve SO215448 (**43**) 15.vii.2009, genitalia det. VFC — PJC & VFC

1275 *D. flavidorsana* Knaggs — Preston Montford SJ4314 (**40**) 23.vii.2005, genitalia det. — AMD

1279 *D. acuminatana* (L. & Z.) — Hutton Conyers SE3273 (**65**) 4.viii.2009, genitalia det. — CHF; Graig Upper R658117 (**H5**) 30.v.2009, male genitalia det. — KGMB

1286 *D. sedatana* Busck — Instow SS4731 (**4**) 6.v.2009 — SDB

EPERMENIIDAE

478 *Phaulernis fulviguttella* (Zell.) — Dunphail NJ016484 (**95**) 19.vii.2009 — M. Taylor *per* MRY

481 *Epermenia falciformis* (Haw.) — Hutton Conyers SE3273 (**65**) 21.vi.2009, det HEB — CHF

482 *E. insecurella* (Staint.) — Wembury Point SX501483 VC (**3**) 21.viii.2009 — BPH

SCHRECKENSTEINIIDAE

485 *Schreckensteinia festaliella* (Hübn.) — Morben Camp Site, Nr. Machynlleth SN706987 (**47**) 25.vii.2009 — Montgomeryshire Moth Group, PRW, CWP & M.D. Haigh, *per* PRW; Ayr Gorge NS4525 (**75**) larval feeding signs on *Rubus idaeus* 1.viii.2009 — SEM *per* KPB; Morland NT0496 (**85**) larval feeding signs on *Rubus idaeus* 14.x.2009 — A.Huff & KPB

PYRALIDAE

1290 *Chilo phragmitella* (Hübn.) — Cors Dyfi Nature Reserve SN701984 (**47**) 25.vii.2009 — Montgomeryshire Moth Group, PRW, CWP & M.D. Haigh

1293 *Chrysoteuchia culmella* (Linn.) — Castlegannon Quarry S545306 (**H11**) 13.vi.2009 — KGMB

1294 *Crambus pascuella* (Linn.) — Castlegannon Quarry S545306 (**H11**) 13.vi.2009 — KGMB

1302 *C. perlella* (Scop.) — Castlegannon Quarry S545306 (**H11**) 13.vi.2009 — KGMB

1307 *Agriphila latistria* (Haw.) — Commins Coch SH845028 (**47**) 30.viii.2009, det. M.D. Haigh — PRW

1314 *Catoptria margaritella* ([D. & S.]) — Graig Upper R668124 (**H5**) 19.vii.2009 — KGMB; Coolavehy R681152 (**H8**) 09.viii.2009 — KGMB

1324 *Pediasia aridella* (Thunb.) — Tramore saltmarsh S602009 **(H6)** 8.vi.2007 — TB, **New to Ireland,** *Ir. Nat. J.* **30**:64

1325 *Platytes alpinella* (Hübn.) — Tramore Burrow S617004 (**H6**) 9.vii.2009 — TB

1329 *Donacaula forficella* (Thunb.) — Maes yr Haf, Newport SN05713896 (45) 4.ix.2009, first county record since 1886 — ADL

1330 *D. mucronellus* ([D. & S.]) — Drimsdale NF757374 (**110**) 27.vi.2009 — S. Duffield *per* MRY

1334 *Scoparia ambigualis* (Treits.) — Rahan W631981 (**H5**) 26.vi.2009 — KGMB

1335 *Scoparia ancipitella* LaHarpe — Ordiquhill, Cornhill NJ573555 (**94**) 16.vii.2009 genitalia det. — Roy Leverton *per* MRY

1340 *Eudonia truncicolella* (Staint.) — Ardivachar NF7445 (**110**) 15.vii.2009, genitalia det. MRY — C. Johnson *per* MRY

1354 *Cataclysta lemnata* (Linn.) — Derrymore R451841 (**H9**) female 23.vi.2009 — KGMB

1355a *Musotima nitidalis* (Walker) — Merritown Heath, Hurn SZ1199 (**11**) 11.viii.2009, det. M.R. Honey — D. Evans & M. Jeffes *per* PHS, **New to the British Isles**

1356 *Evergestis forficalis* (Linn.) — Piper's Croft NN903636 (**89**) 3.vii.2009 — J. Thorpe *per* MRY

1356a *E. limbata* (Linn.) — Winchelsea Beach TQ9116 (**14**) four at light 26.vi.2004 — J. Chainey *per* AMD

1359 *Cynaeda dentalis* ([D. & S.]) — St Mary's, Isles of Scilly (**1**) 4.vii.2009 — M.A. & W.J. Scott, *Atropos* **39**: 38

1367 *Pyrausta cingulata* (Linn.) — Llanelwedd Old Quarry SO051520 (**43**) 28.v.2009 — PJC & VFC; Partanhall, Burnmouth NT956611 (**81**) 1.vi.2006 — I. Cowe *per* MRY

1374a *Sclerocona acutellus* (Eversmann) — Chorleywood TQ0296 (**24**) 29.vi.2006 — R. Ellis *per* MVA

1375 *Ostrinia nubilalis* (Hübn.) — Murlough NR J4033 (**H38**) 18.vii.2006, genitalia det. KGMB — K. Murphy *per* MSP

1376 *Eurrhypara hortulata* (Linn.) — Oldmeldrum NJ823279 (**93**) 6.vii.2009 — MRY

1380 *Phlyctaenia perlucidalis* (Hübn.) — Glasbury SO180390 (**43**) 28.vi.2009 — PJC & VFC, **New to Wales**

1386 *Opsibotys fuscalis* ([D. & S.]) — Derrygreenagh S234673 (**H11**) 30.v.2009 — KGMB

1387 *Nascia cilialis* (Hübn.) — Amberley Wildbrooks TQ0414 (**13**) one at MV light 27.vi.2009 — D. & P. Green *per* AMD

1389 *Udea fulvalis* (Hübn.) — Ferring TQ091021 (**13**) 28.vii.2009 — T.H. Freed *per* CRP

1392 *U. olivalis* ([D. & S.]) — Glen Coe NN112575 (**98**) 30.vi.2007, det. MRY — A. Masterman *per* MRY; Lavistown House S543542 (**H11**) 13.vi.2009 — KGMB

1395 *U. ferrugalis* (Hübn.) — Glen Coe NN112575 (**98**) 23.vi.1998, det. MRY — A. Masterman *per* MRY

1403a *Duponchelia fovealis* Zell. — St Mary's, Isles of Scilly (**1**) a few indoors, bred from a house plant ix-x.2009 — M.A. & W.J. Scott, *Atropos* **39**: 38; Menston SE1743 (**64**) 7.ii.2009 — G.C. Harrison *per* HEB; Fenham NZ224657 9 (**67**) 12.x.2009 — J. Wallace *per* TJT

1404 *Spoladea recurvalis* (Fabr.) — Foremark Reservoir, Ticknall SK32452435 (**57**) 25.x.2009 — DB; Minishant NS319139 (**75**) 30.x.2009 — D. Smith *per* MRY, **New to Scotland**, *Atropos* **39**: 77

1409a *Diaphania perspectalis* (Walk.) — Biddenden (**15**) 21.ix.2009 — S.J. Broyd; Leigh-on-Sea (**18**) 18.ix.2009 — G. Bailey, *Atropos* **39**: 74

1410 *Agrotera nemoralis* (Scop.) — Kilminorth Wood SX243538 (**2**) 1.vii.2009 — P. Boggis *per* LACT

1415 *Orthopygia glaucinalis* (Linn.) — Stichill NT713382 (**80**) 7.ix.2009 — D. Ogston *per* MRY, **New to Scotland**

1421 *Aglossa pinguinalis* (Linn.) — Colva SO207540 (**43**) 08.vii.2009, det. VFC — J. Bisby & D. Warren *per* PJC

1424 *Endotricha flammealis* ([D. & S.]) — Morben Camp Site, Nr. Machynlleth SN706987 (**47**) 25.vii.2009 — Montgomeryshire Moth Group, PRW, CWP & M.D. Haigh

1426 *Achroia grisella* (Fabr.) — Tramore S578014 (**H6**) 28.vi.2009 — TB

1428 *Aphomia sociella* (Linn.) — Ballindalloch NJ178366 (**95**) 29.vii.2009 — M. Taylor *per* MRY

1439 *Trachycera advenella* (Zinck.) — Piper's Croft NN903636 (**89**) 29.viii.2009 – J. Thorpe *per* MRY

1443 *Pempelia genistella* (Dup.) — Stoke Common SU9885 (**24**) 5.viii.2009 — MVA & PRH

1451a *Etiella zinckenella* (Treits.) — Leicester (**55**) 13.vii.2009 — A.J. Mackay

1461 *Assara terebrella* (Zinck.) — Powis Castle SJ214064 (**47**) 12.vi.2009 — Montgomeryshire Moth Group, PRW & M.D. Haigh

1462 *Pempeliella dilutella* ([D. & S.]) — Commins Coch SH845028 (**47**) 18.vi.2009, det. M.D. Haigh — PRW

1486 *Apomyelois bistriatella* Hulst — Higher Poynton SJ945838 (**58**) 14.vi.2009, genitalia det. — SHH

1475 *Ephestia kuehniella* Zell. — Elton TL088940 (**31**) 10.i.2009, genitalia det. BD — B. Stone *per* BD

1478b *Vitula biviella* (Zeller) — Stoke D'Abernon (TQ1259) (**17**) 6.vii.2009, det. JP — J.E. Chainey *per* JP

1479 *Plodia interpunctella* (Hübn.) — Boat of Garten NH940184 (**95**) 4.i.2009 — M. Taylor *per* MRY

1483 *Phycitodes binaevella* (Hübn.) — Barna M243236 (**H16**) 24.vi.2009 — KGMB

PTEROPHORIDAE

1492 *Oxyptilus laetus* (Zell.) — Tramore S578014 (**H6**) 27.vi.2006, genitalia det. C. Hart — TB, *Ent. Rec.* **122**: 34, **New to Ireland**

1496 *Cnaemidophorus rhododactyla* ([D. & S.]) — Bonchurch SZ577780 (**10**) 16.vii.2009 — J. Halsey, *Ent. Rec.* **122**: 5

1497 *Amblyptilia acanthadactyla* (Hübn.) ? Glasbury SO180390 (**43**) 24.vi.2009, genitalia det. PJC — PJC & VFC

1498 *A. punctidactyla* (Haw.) — Greenmount Agriculture College J154839 (**H39**) 22.vii.2008, genitalia det. JC — ER

1504 *Platyptilia pallidactyla* (Haw.) — Loch Feoch NM879238 (**98**) 21.vii.2009 — C. Farmer *per* MRY

1506 *Stenoptilia millieridactyla* (Bru.) — Kenilworth SP286711 (**38**) 22.vi.2009, genitalia det. — M. Kennard *per* NJS; Bothwell NS7058 (**77**) vii.2009, det. C. Hart — W. Higgins *per* MRY; Kinghorn NT2686 (**85**) at light 26/27.ix.2009, genitalia det. KPB — B. & S. Little *per* KPB

1509 *S. pterodactyla* (Linn.) — Piper's Croft NN903636 (**89**) 25.vii.2009 — J. Thorpe *per* MRY

1519 *Euleioptilus carphodactyla* (Hübn.) — Dovedale Valley SK15055148 (**57**) 14.vi.2009 — MD

Corrections

To the 2008 Review:

412 *Argyresthia pygmeaella*: Pruglish (H27), grid ref. as G09100 to read: G091040

760 *Exoteleia dodecella*: Raheen Wood (H9), grid ref. as R64127 to read: R641827

888 *Mompha propinquella*: Tarmon (H27): grid ref. as F269204 to read: F629204

1048 *Acleris variegana*: Killoteran (H6) grid ref. as SS555115 to read S555115

Important records from the Rothamsted Estate, Harpenden, Hertfordshire (VC 20) in 2009

Important records from the Rothamsted Estate, Harpenden, Hertfordshire (VC 20) in 2009

Moth recording began at Rothamsted in 1933 and since then many light traps have been used to monitor moth populations on the Estate. In addition to these, suction traps have also operated to sample other insects, chiefly aphids. Many of the light traps only operated for short periods but it is from three of the longer-running sites that the interesting records were obtained in 2009.

The Allotments trap (site 34, OS. grid reference TL 134134) was first erected in 1966 and, as the name suggests, was situated in a large area of mature allotments; these were established in 1852. The area has undergone significant changes since the trap was installed, as the allotments were cleared two years later. The area has since been used for a variety of purposes, from wheat and bean cultivation to a dumping ground for building debris, and much of it is now taken up by a car park and new buildings. The trap now stands amid neat lawns and shrubs, but there is an experimental area nearby where willows are grown, surrounded by an uncultivated zone (Woiwod & Gould, 2008. *Long-term Moth Studies at Rothamsted.* In Plant, C. W., *The Moths of Hertfordshire*. HNHS).

C. B. Williams' first trapping site at Rothamsted is still in operation and is known as Barnfield (site 1, TL 132135). Barnfield was the site of Rothamsted's first 'classical' fertiliser experiments and root crops were grown in the field for 126 years. When this ceased in 1969 a range of arable crops were grown. The trap was repositioned at its original site in 1960 and gradually the field margin became less intensively managed and since 1984 Barnfield has been turned over to grass ley. The trap is now surrounded by a mixed hedge that has developed naturally (Woiwod & Gould, *loc. cit.*).

In 1990, in addition to the four main light traps on the Estate, an extra 22 were set up to form the Farmland Network. This ran until 1993 when only one was kept active, to act as the official Rothamsted light-trap for the national Environmental Change Network. This trap is known as Park Grass (site 613, TL 122129), as it stands next to the 'classical' experiment of the same name. It is quite an open situation, where the trap is flanked on one side by the managed grassland of Park Grass and on the other by arable fields.

On the night of 21/22 June a single specimen of the Grass Rivulet *Perizoma albulata* (D.&S.) (Geometridae), was caught in the Allotments trap. There have been only two previous records on the Rothamsted Estate, both from the Barnfield trap, on 2/3 July 1986 and 13/14 July 2005. These three moths are the only post-1950 records for the TL 11 ten-kilometre square, although Roger Prue and David Kirk both caught singletons on 31 May 2009 at Hemel Hempsted in the neighbouring square TL 00. First recorded in Hertfordshire in 1887, *P. albulata* is considered as an extremely local or rare resident and appears to have been lost from 83 per cent of previously occupied sites; it is therefore designated as Endangered in the county (Plant, 2008. *The Moths of Hertfordshire*. Hertfordshire

Natural History Society). The reasons for this decline are unknown and do not mirror the fortunes of the foodplant, Yellow Rattle *Rhinanthus minor* in Hertfordshire. The plant was described as widespread in the 19th century but it had declined significantly by the 1960s (Dony, 1967. *Flora of Hertfordshire*. Hitchin Museum. Cited in: James, 2009. *Flora of Hertfordshire*. Hertfordshire Natural History Society). However, it appears to have increased in some areas since the 1970s, partially as a result of its frequent inclusion in seed mixes for conservation purposes (James, *op. cit.*). Interestingly, it occupies more tetrads within the TL 00 ten-kilometre square than any other. Nationally, Rothamsted data has shown that *P. albulata* numbers declined by 96 per cent between 1968 and 2002 (Fox, *et al*, 2006. *The State of Britain's Larger Moths*. Butterfly Conservation & Rothamsted Research). Despite this decline, *P. albulata* is widely distributed throughout England, Wales and Scotland and can be locally frequent in lowland areas and around the coast.

The Kent Black Arches *Meganola albula* (D.&S.) (Nolidae) caught in the Allotments trap on 13/14 July was a first for the Estate and only the second record for Hertfordshire. The first specimen was taken at Arkley on 5 August 1954 (*Ent. Gaz.* **5**. 232) and is considered likely to have been an immigrant; it is probable that the Rothamsted moth also fits this status. This Nationally Scarce species is well distributed on or near the coast from Devon to Norfolk, and has also been recorded inland in Hampshire, Berkshire and Surrey. As with the two above, records away from these areas may refer to immigrants. The larva of *M. albula* feeds on Dewberry *Rubus caesius*, Raspberry *R. idaeus*, Bramble *Rubus* sp. and Wild Strawberry *Fragaria vesca* and with the wide distribution of these plants it is surprising that the moth is not similarly widespread.

Two individuals of the Mere Wainscot *Chortodes fluxa* Hb. (Noctuidae), were caught at Rothamsted in 2009. The first for the Estate (Allotments, 9/10 July) was closely followed by another in the Park Grass trap on 14/14 July. These represent only the fourth and fifth records for Hertfordshire and are also the first time that the species has been found in TL 11. The first for the county was recorded in Hitchin in 1880 by S. Tuke, with another found at the same locality in 1903 by A.H. Foster (Foster, 1937. *A List of the Lepidoptera of Hertfordshire*. Transactions of the Hertfordshire Natural History Society & Field Club. **20**. 157-279. Cited in: Plant, *op. cit.*). It then took almost a century before the next was discovered, when Jim Reid caught one on 22 July 2000 at Scales Park (Plant, *op. cit.*). Each of these are deemed to be migrants, as are the two Rothamsted specimens. Waring *et al* (2003. *Field Guide to the Moths of Great Britain & Ireland*. British Wildlife Publishing) describe the main distribution of this Nationally Scarce species as a belt running from Oxfordshire and Buckinghamshire, north-east through the east Midlands and into East Anglia. There are also scattered colonies in the west Midlands and north to Yorkshire. Records have also occurred from many places along the coast between Devon and the Humber and it is certainly resident in suitable habitat along this coastline. The larva of *C. fluxa* feeds upon Wood Small-reed *Calamagrostis epigejos*, which is found in woodland rides and clearings on poorly drained soils, and the drier parts of inland and coastal wetlands. This foodplant has increased significantly in Hertfordshire over the last 20 years (James, *op. cit.*), so it will be interesting to see if *C. fluxa* utilises this and becomes resident in the county in the future; or it may even already be resident, meaning the recent records could be vagrants from as yet undiscovered colonies.

The Blackneck *Lygephila pastinum* Treit. (Noctuidae) had a fantastic year in Hertfordshire in 2009 and was recorded at many new sites and in good numbers (Colin Plant, *pers. comm.*). However, the singleton caught in the Barnfield trap on the night of 30 June/1 July was only the second for the Estate and, indeed, for the grid square TL 11. The first was trapped on 5/6 July 1976 in a trap known as Geescroft I (site 22, TL 132128). The hot summer of 1976 was another good period for the species in Hertfordshire and may have heralded the start of its population increase. Currently it is widely distributed in the south-eastern half of the county and on calcareous soils in the north-west (Plant, *op. cit.*), which certainly mirrors the densest distribution of the foodplant, Tufted Vetch *Vicia cracca* (James, *op. cit.*). It will be interesting to see whether the 2009 season has led to a further expansion of this species in Hertfordshire. Elsewhere *L. pastinum* is widely distributed and locally common in the southern half of England, the south Midlands, East Anglia and South Wales and local populations can be found northwards to Yorkshire (Skinner, 2009. *Colour Identification Guide to Moths of the British Isles*. Apollo Books).

Many thanks to Colin Plant, the Hertfordshire and Middlesex Moth Recorder, for information regarding these records, and to colleagues at Rothamsted for their continued assistance operating the light traps.— PHILIP J. L. GOULD, Co-ordinator of the Rothamsted Insect Survey Light-trap Network, Plant & Invertebrate Ecology Department, Rothamsted Research, Harpenden, Hertfordshire AL5 2JQ (E-mail: phil.gould@bbsrc.ac.uk).

SOCIETY MATTERS

DIPTERIST'S HANDBOOK

The new Second Edition of this publication is now available from the Society, at a discounted rate to members.

MEMBERSHIP RENEWALS

You should find a membership renewal form in the envelope with this copy of your favourite peer reviewed journal. Please note that, despite the current financial pressures on the Society, subscriptions for 2011 have not been increased.

Please note that you only need to complete and send in the renewal form:

a) if you want to pay by cheque or postal order

b) if you want to tell us about any changes to your membership or donations

c) if you have not already renewed...(yes, quite a few people renewed twice last year, returning the forms received with their AES Bulletin mailing as well as their Entomologist's Record mailing!)

If you want to renew your membership by means of a new or existing standing order, simply quote your membership number and surname as the reference and we will update your membership record on receipt of our bank statement, without your needing to send us the form. You can use the standing order section of the form to send to your bank.

HISTORY OF THE ENTOMOLOGIST'S RECORD

A poster outlining the 120 year history of the *Record* was presented at this year's Royal Entomological Society annual meeting. If you would like a copy of the poster (in pdf format, or printed on an A4 sheet) please let us know.

'BIG SOCIETY'

We still have one trustee vacancy and always welcome people who would be able to help promote the Society at events. We also need an accountant able to take over as Independent Examiner of Accounts, a role ably performed by John Flynn in previous years.

Our membership numbers continue to increase, especially those of the Bug Club, which is run in collaboration with the Royal Entomological Society. We will need more subscribers to the *Entomologist's Record* in future if we are to continue to develop the journal without increasing subscription rates, so your help in promoting the *Record* to friends, colleagues and institutions would be very welcome.

DATA PRIVACY STATEMENT

All personal information supplied to the Amateur Entomologists' Society is treated in accordance with UK legal requirements for data protection. The Society will not divulge personal information to any third party, except under legal obligation, or with the express permission of the owner of the information.

Currently, such information is used only for the purposes of administering the Society and the subscriptions that it receives. It could be used to publish subscriber / membership lists, subject to the express permission of each subscriber or member concerned, but there are no plans to publish any such list in the foreseeable future.

AES EVENTS IN THE NEW YEAR

26th February 2011

Young Entomologists' Day @ Oxford University

Oxford University Museum of Natural History, Parks Road, Oxford OX1 3PW.

11:00 – 4:00.

There will be three aspects to this event:

1. Presentations by young entomologists: Children between the ages of 4 and 18 are invited to bring exhibits they are willing to talk about to fellow members – or they can just give a brief talk, with or without slides. Last year, many of the children gave PowerPoint presentations – including five year old Magnus McLeod.

The children's talks will be preceded by a presentation by Dr Erica McAllister from the Natural History Museum, London, who will also be one of the expert judges. Prizes will be awarded for the best presentations, and these will include signed prints presented by Richard Lewington. Full details are available on the AES website www.amentsoc.org or from the AES Secretary (secretary@amentsoc.org).

2. Tours of the Hope Entomological Collections

These will be conducted by the Museum's Curator of Entomology, Darren Mann. F 2

3. Information on other organisations

Other invited societies and initiatives will be in attendance.

There is no charge for admission but please complete a booking form as soon as possible if you plan to attend (the lecture theatre was almost full at this event last year, so early booking is advised).

Saturday 30th April 2011: AES Members' Day & AGM

Our Members' Day will take place at Butterfly World near St Albans, Hertfordshire. This new venue is next door to the Royal Entomological Society HQ.

Further details will be provided to members closer to the time.

OTHER EVENTS

AES events are organised on a rolling basis (i.e. we have no fixed annual calendar of events) and are publicised in good time to members through our journals and on our main website www.amentsoc.org.

CALL FOR PAPERS AND NOTES

We welcome material for publication from both amateurs and professionals. First-time authors are welcome to contact the Editor for advice if they wish; his contact details inside the front cover. It is not necessary to be a subscriber to submit a paper (though we may try to persuade you).

First and foremost we publish material on **British insects, primarily moths (Lepidoptera)** and this material is given priority when space is short. If space permits we also accept contributions on **European Lepidoptera** and, much less frequently, **other European insect groups** if we think these will be of interest to British readers. Material from other geographical and taxonomic areas should ideally be offered to other journals, except that we may also accept papers describing **new species** of moths from areas outside Europe if we have space.

We welcome colour illustrations, but these will only be used if the editor deems them necessary for the understanding or enjoyment of the text. We regard habitat images as important as pictures of the insects, as long as they illustrate something useful. We do not charge for publication, but as with all peer-reviewed journals we require exclusivity and all submitted material, without exception, should not be offered to, or be under consideration by, any other publication at the same. Authors of accepted papers will receive proofs for checking (usually as a pdf via e-mail) a couple of weeks before publication.

Because we publish six times a year we can usually offer rapid publication. Shorter *Notes* are vetted by the Editor. Full *papers* are peer-reviewed by at least one referee, sometimes two, and may be returned to authors for changes to be made before final acceptance. In general, however, we try to get things into print rapidly. We prefer submissions to be made by e-mail if possible (see inside front cover or visit the web site). Typed tables may be pasted into the word processor file. However, please do not embed (insert) files from other programs as this compromises quality and may make editing impossible. All photographs and other images, all charts and any graphs should be sent as separate files. Please set text outside the frames – if it absolutely must be inside the frame please use Times New Roman 9-point font. The Editor can scan and return originals if asked. All contributions must bear the name and address of the author and, if you wish, an e-mail address. Please follow the format in this issue.

We no longer issue paper reprints unless asked. Authors of papers will be e-mailed a pdf of their work and they may print as many copies as they wish. To reduce costs we will only send a pdf of Notes if requested to do so. All material must be sent to the Editor. We welcome books for review, but unsolicited book reviews will not usually be accepted.

We are also looking for new moth image for the 2011 front cover. It will appear in the same format as the cover for 2010. If you have an image suitable for this please email the editor.

AES Publications

Amateur Entomologists' Society

British Butterflies throughout the year by Peter May
This new book from the AES describes the adults of different species of British butterflies, according to the time of year they appear on the wing. Nearly all the 60 British species are illustrated. Focussing on encouraging an interest in entomology among the young, and the young at heart, there is a helpful calendar of flight times and a useful checklist to help you keep track of your observations. **£ 5.00**
Members price **£ 3.80**

Preparing and maintaining a collection of Butterflies and Moths by P. May and M. White. A practical manual detailing the various methods used to prepare specimens for a collection, from killing methods, setting the specimens and repairing damaged ones, to storage and preservation, including pest prevention and cure. 21 pages. 4 figures and 5 plates. (2006) **£4.85**
Members price **£3.65**

The Hymenopterist's Handbook by Dr. C. Betts *et. al.*
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Revised Flight Tables for the Hymenoptera
Revised flight tables for the Hymenoptera giving, wherever possible, times, location, flower visits and some indication of distribution and abundance. 24 pages (1988) **£ 3.10**
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A Coleopterist's Handbook
Edited by J.Cooter & M.V.L.Barclay The *Coleopterist's Handbook*, is now available as a fully revised and expanded fourth edition. Nomenclature has been brought inline with current use, collecting/curatorial methods reflect best practice and plant/beetle and beetle/plant lists are included together. Recent additions to the British fauna, modern and traditional techniques are included. All advice and comment given in the book is based upon collective years of practical experience of both curatorial methods and field craft; beetle family chapters have each been written by an internationally recognised authority. 496 pages including 32 colour plates. **£ 54.00**
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Specifically intended for beginners, although it is also suitable for experienced Phasmid enthusiasts, it is one of the few guides to rearing that features the majority of the culture stocks available, 22 species in detail. The informative text is complimented by 8 colour plates, 14 black and white plates and 29 figures. (New edition, 2003) **£ 11.20**
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The Study of Stoneflies, Mayflies and Caddisflies by T.T. Macan
A comprehensive guide to collecting and studying the biology and ecology of these aquatic insects. 44 pages, 10 figures and bibliography (1982) **£ 4.20**
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Breeding the British Butterflies by P.W. Cribb
A practical handbook covering all aspects of butterfly breeding, including general techniques, equipment and hints on how to breed each of the British species. 60 pages, 6 figures, 5 plates, Revised (2001) **£ 5.20**
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Written at the turn of the century, this book has been reprinted because of its scarcity and value to students of Lepidoptera. It gives a complete month by month guide to which species and stages of macros and micros to look for and how to find them. Also contains a biological account of the early stages and how to keep, rear, photograph and describe them. 422 pages. Hardback. (Reprinted 1994). **£ 24.00**
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and when to trap, limitations of traps and their relative performance. 68 pages,
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The Amazing World of Stick and Leaf Insects by Paul D. Brock
A superb, comprehensive guide, for all those intrigued by these groups
insects. Topics covered include structure, fascinating facts, life history a
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outlines the major known species around the world on a regional basis.
section on Fossils is included. Includes a comprehensive glossary of t
technical terms used in the description and classification of stick and le
insects. Hardback A5, 184 pages, 46 figures, 26 black and white plates and
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Rearing Parasitic Hymenoptera by M. Shaw
This booklet provides information on the parasitic Hymenoptera to ena
successful studies to be made of this little understood group of the Brit
insect fauna. Details are given on the general biology of parasitic was
rearing principles, efficient rearing practices and detailed methods of deali
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Larval Foodplants of the British Butterflies by Peter May
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POPULATION SIZE AND DISPERSAL ABILITY OF *CRYPTOCEPHALUS NITIDULUS* (LINNAEUS, 1758) (COL.: CHRYSOMELIDAE)

R.W. Piper and S. G. Compton

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Abstract

Using mark-release-recapture, host plant marking and direct observations we obtained population size estimates and information on the dispersal ability of the Nationally Endangered beetle *Cryptocephalus nitidulus*. The studied sub-population was estimated to consist of 666 (±S.E. 281) adult beetles. It appears that *C. nitidulus* moves through its habitat by using suitable host-plants as 'stepping stones'. Sub-populations separated by relatively small areas of unsuitable habitat (e.g. open ground or dense woodland) are effectively isolated. The relatively small population sizes of this beetle and its association with transient, successional habitats makes it vulnerable to local extinctions. In addition, the limited dispersal ability of *Cryptocephalus nitidulus* means that other patches of suitable habitat are unlikely ever to be colonised naturally.

Introduction

Dispersal abilities of phytophagous insects range from less than 1km to more than 20km (Peterson and Denno, 1998; St Pierre and Hendrix, 2003) and in many ways the colonising insect is a slave to its environment (Loxdale and Lushai, 1999). Ideal colonists respond rapidly to habitat change, quickly locating suitable new habitats and proliferating once there (MacArthur & Wilson, 1967; Safriel and Ritte, 1980). Theoretically, habitats that are unpredictable in space and time should play host to those species which are adept at colonisation (Southwood, 1962), but the reverse has often been found (Thomas, 1984; Warren, 1987; Thomas, 1991). In western Europe, human activity has fragmented the natural environment to such an extent that species with a poor dispersal ability are no longer able to move through swathes of habitat. This feature predisposes them to local extinction even when the fragmentation of their habitat is minimal (Doak, 2000) and it these species that are often of conservation concern.

Site management and the implementation of recovery plans for rare insects, are often hampered by a lack of knowledge of their ecology (Bedick, 1999), a problem compounded by the difficulty in finding many rare insects in any numbers in the field, which makes acquisition of information difficult (Britton, 1994; New *et al.*, 1995). Without this basic information, habitat management can lead to the local extinction of the species, rather than its recovery (Ehrlich and Ehrlich, 1981).

The consequences of poor dispersal ability are compounded by the extreme habitat specialisation of some insects. This is particularly the case for species that rely on dynamic, early-successional habitats such as woody invasive scrub, which only remains optimal for a few years. It appears counter-intuitive for these insects to be sedentary, because in order to persist in the landscape they need to be able to routinely disperse and populate new areas of suitable habitat as they become available. It has been shown, however, that insect species, which depend on dynamic habitats are surprisingly sessile often because habitats have been fragmented to such a degree that there is a negative selection pressure on traits that aid dispersal (Thomas, 1984; Warren, 1987; Thomas, 1991).

Rarity is often considered to be a consequence of an inability to colonise new habitat patches, but is not usually considered as a causal factor. However, sedentary but abundant species can potentially compensate for having poor dispersal abilities thanks to their large numbers, which mean that rare, long-distance dispersal events will take place periodically and are potentially sufficient to track changes within the landscape. In contrast, species which combine low dispersal ability and small population sizes are much less likely to be favoured by chance, long-distance dispersal.

Cryptocephalus beetles are a perfect example of this paradox as many of the species in this genus depend on short-lived ecotones, but their dispersal ability appears to be very poor. It has been shown that certain UK *Cryptocephalus* species exhibit considerable genetic differentiation between sub-populations that are separated by trivial distances (Piper and Compton, 2003). In the case of scrub transition species this may not have been a problem in the past, if the NW Europe woodland dynamic model is correct (woodland with numerous, open spaces, maintained by large ungulates, fire and poor soils) (Vera, 2000; Svenning, 2002).

This study describes field studies of wild populations of *C. nitidulus* addressing the questions of 'how many individuals live in an area of suitable habitat and how mobile is *this beetle*?' The answers are used to suggest steps that can be taken to safeguard the remaining populations of this beetle and other insects with similar characteristics.

Study Sites

Data was collected from a small area on the White Downs, Surrey, England (N51°:13':53"; W0°:23':37") where there is a strong sub-population of *C. nitidulus.* This area is situated on the south-facing escarpement of the North Downs. The steep slopes are heavily rabbit-grazed leaving a short, floristically diverse scrub. Several tree species form a scrub ecotone between the grassland habitat and the surrounding woodland, with *Betula pendula* and *Crateagus monogyna* predominant.

Materials and methods

Population sizes and dispersal ability were assessed in 2000 by marking and recapturing *C. nitidulus* adults in a small area on the White Downs (Figure 1). To provide data on dispersal every host tree in Area B was marked with a numbered

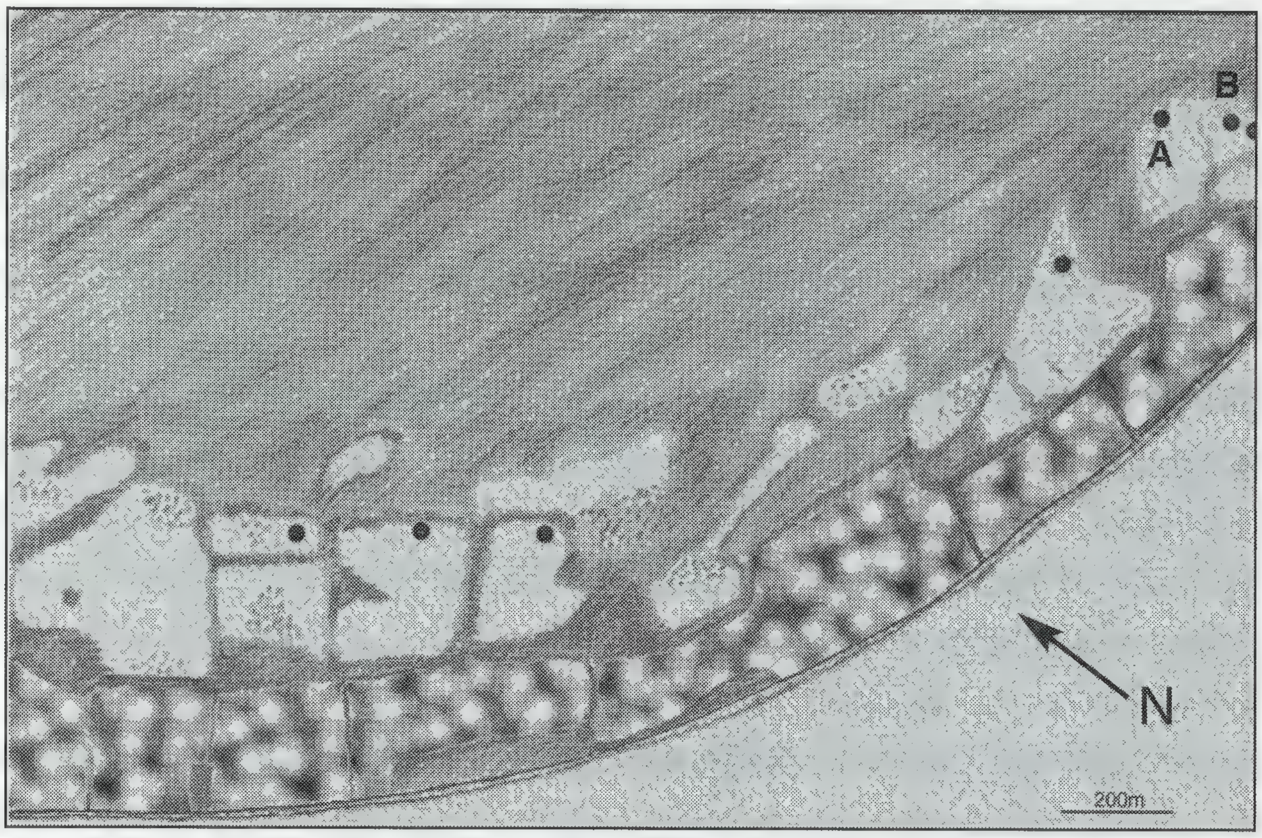

Figure 1. *Cryptocephalus nitidulus* sub-populations on the White Downs and Hackhurst Downs. Area B is the site of the strongest *Cryptocephalus nitidulus* population identified during surveys where data were collected. The other spots indicate other, much smaller sub-populations. Grey indicates more-or-less unbroken woodland and the marbled areas indicate arable land in the bottom of the Mole Valley. The white areas in between the woodland and the arable land are tracts of calcareous grasslands on the south-facing escarpment of the North Downs. Birch and hawthorn are very common in these tracts of grassland and areas with particularly advanced scrub are indicated by the grey stippling.

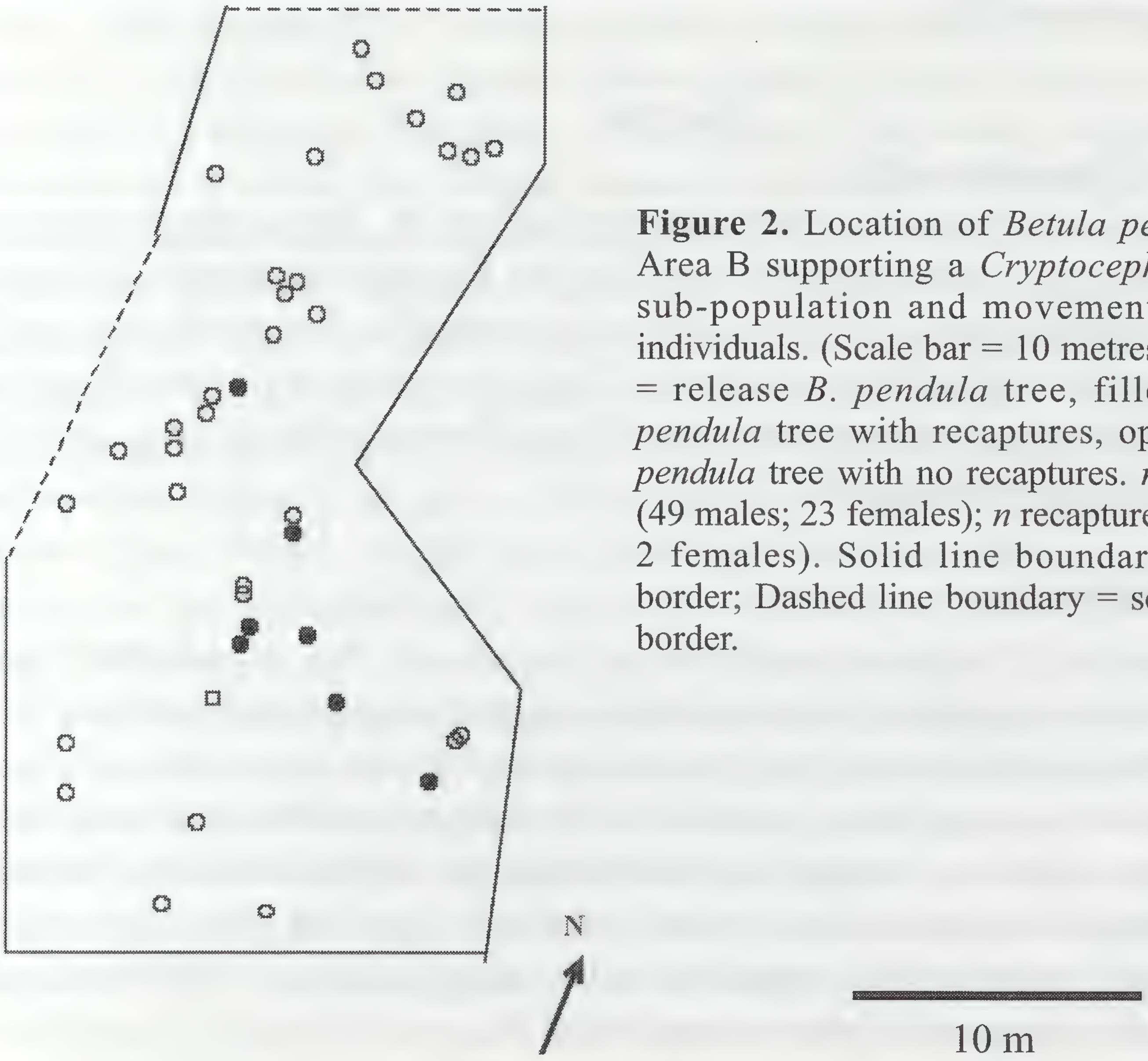

Figure 2. Location of *Betula pendula* trees in Area B supporting a *Cryptocephalus nitidulus* sub-population and movements of released individuals. (Scale bar = 10 metres). Open square = release *B. pendula* tree, filled circle = *B. pendula* tree with recaptures, open circle = *B. pendula* tree with no recaptures. *n* released = 72 (49 males; 23 females); *n* recaptured = 7 (5 males, 2 females). Solid line boundary = woodland border; Dashed line boundary = scrubless habitat border.

waterproof tape tag. These trees were then mapped on X and Y co-ordinates by laying two 50m measuring tapes at right angles to one another to form axes (Figure 2).

This was carried out at the beginning of June – the time of year when the adult beetles are at their peak. All potentially suitable habitat in the highlighted area of Figure 1 was sampled for adults using beating and visual searching of host trees. Area B in Figure 1 supported a strong sub-population concentrated in a small patch of habitat no more than 30m x 50m (Figure 2). In addition a very small sub-population (Area A in Figure 1) was also located. All beetles were marked using a very small spot of typing correction fluid. Individuals from the Area B sub-population form the basis of this study and they were differentiated from the Area A sub-population by a mark on the right elytron rather than the left in order to detect any interchange between these two sub-populations, which were separated by around 150m of unsuitable habitat. Following marking, the beetles were retained over-night in large storage boxes replete with food plants.

The Lincoln index (Lincoln, 1930) was used to estimate the population size of the adults, with Bailey's Correction (Bailey, 1952) because of the small sample sizes.

In the early morning of 2 June 2000, the boxes containing the marked adults from Area B were placed beneath a host tree in the core of their habitat. After four days a recapture was conducted and the sex and location (tree number) were recorded for any marked beetles recaptured. Relocated beetles were retained until the whole study area had been searched. The weather over the four-day release periods was warm and dry.

Results

Estimation of population sizes

Seventy-two *C. nitidulus* adults were marked in Area B. The recapture rate was very low (just 4.2%), reducing the accuracy of the population estimate. Using the Lincoln index with Baileys Correction it was estimated that the population size in this area was 666 ± S.E. 281 adult beetles. This sub-population is one of several along the south facing escarpments of the White Downs, although it is probably the largest current sub-population.

Adult movements

Very few marked *C. nitidulus* adults were recaptured. The dispersal of these recaptured adults was limited, with no marked adults being found more than 10 m away from the release tree. The low recapture rate is more than likely a consequence of the large host trees (4-5m in height) and the difficulty with sampling them effectively rather than the beetles leaving this island of suitable habitat. Dispersal of *C. nitidulus* in suitable habitat is facilitated by a network of loosely grouped host plants that appear to act as 'stepping stones'. No interchange of individuals was detected between Areas A and B.

Discussion

The UK range of *C. nitidulus* is not as restricted as some of its congeners, as it occupies at least seven patches along a two kilometre long arc of the White Downs as well as being found elsewhere. Our estimate of the size of one sub-population of this species has a considerable degree of error because of the low recapture rates (probably the result of adults sheltering higher up in tall host trees), but it is clearly more abundant and widespread than some other *Cryptocephalus* species that have a lesser conservation status. Nonetheless, its sub-populations are further apart than some of these congeners and separated from each other by large tracts of mature woodland or areas of scrub-free habitat. Movements between its sub-populations are therefore probably exceedingly rare – the dispersal of even mobile insects can be inhibited by barriers such as hedgerows or tracts of woodland (Wratten *et al.*, 2003). Direct observations of the flight behaviour *C. nitidulus* and *C. decemmaculatus* demonstrate that in suitably hot weather these beetles are quick to take to the wing, but the flights are typically short (mean of 3.9m in *C. decemmaculatus* – unpublished data). Typically, the beetles take to the air steeply then fly rapidly towards the ground until they are intercepted by another tree. Movements through suitable habitat (only possible in warm weather) is accomplished by lots of these short flights using host plants as 'stepping stones' from one area to another.

The poor dispersal abilities of *Cryptocephalus* species are supported by genetic studies. Mitochondrial DNA markers demonstrated complex population structure at the micro-geographical scale in these and other rare UK *Cryptocephalus* species, with evidence of genetic differentiation present between populations separated by distances less than one kilometre (Piper and Compton, 2003). In these beetles it seems that a small barrier of unsuitable habitat is as effective as large geographic distances at isolating populations. In addition to these genetic differences there also appears to be nascent ecological differences between sub-populations, such as subtle changes in host-plant preferences (R. Piper, unpublished data). The poor dispersal ability of these beetles coupled with their habitat requirements can be viewed as drivers of speciation, which is supported by the fact that, globally, the genus *Cryptocephalus* is one of the most speciose beetle genera (Erber, 1988). Similar local genetic differentiation has also been found in some other phytophagous beetle species (McCauley *et al.*, 1988; McCauley, 1991; Rank, 1992).

C. nitidulus depends on mid-successional, transitional habitats. Such habitats would have a short natural life span with any particular location quickly changing to dense scrub and then woodland (T. Coleshaw, pers. comm., J. Cranham, pers. comm). Good dispersal ability would therefore appear to be a prerequisite for any species inhabiting this type of habitat, yet the converse seems to be the case, not only for *Cryptocephalus* species, but also many other insects associated with transitional habitats (Thomas, 1984; Warren, 1987; Thomas, 1991). The clear implication from this is that for these species to have persisted the previous landscapes must either have had succession routinely inhibited by large mammals or other factors (Vera, 2000) and were more dynamic, routinely offering mid-successional habitats in close proximity to each other.

The very limited dispersal ability of *C. nitidulus* is compounded by the fact that host plants for *Cryptocephalus* adults need to have a clear south facing aspect and shelter from the wind. A complex ecotone with scrub invading grassland with many discrete 'pockets' where temperatures may be significantly higher than around exposed trees (Greatorex-Davies, 1992) is required. An ovipositing female *Cryptocephalus* makes no obvious selection of where her eggs will be dropped. *C. nitidulus* females that disperse away from the natal site will be leaving an area that has been successfully used for many generations due to the juxta-position of suitable adult and larval habitat effectively selecting against individuals with better dispersal ability. It could be reasoned that teneral adults which have developed as larvae in an optimal habitat are found on the tree that their mother oviposited from. This pattern was observed in *Yponomeuta padellus* (Brookes and Butlin, 1994). Successive generations of beetle will develop beneath the tree and lay some of their eggs from its branches. Consequently, the integrity of the population of this beetle at any one site may be dependent on an extremely limited number of trees that provide optimal conditions for the adults and larvae.

The fragmentation of habitats is suggested to be one of the major causes for species extinction (Morris, 1995). The remaining populations of *C. nitidulus* have probably been isolated for a very long time. All the current sites of the two species are areas where habitat management is routinely carried out and it has often been the case where management aimed at the conservation of a species has led to its extinction (Ehrlich and Ehrlich, 1981). The autecological information in this paper provides valuable information for the conservation of *C. nitidulus* and other insects with similar requirements. The preservation and enhancement of this species at its last known sites can be assisted by: (i) altering the structure of the vegetation between the sub-populations by providing 'stepping stones' of bushes in suitable microclimatic conditions; (ii) maintaining the presence of a complex scrub where the sub-populations are presently found, but controlling scrub maturation; (iii) planting and maintenance of host trees between sub-populations to provide artificially positioned host plants to facilitate movement between sub-populations. The above proposals take into account the needs of the adults, but any management carried out should be undertaken with equal consideration for the requirements of larvae.

Acknowledgements

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The Scarlet Tiger *Callimorpha dominula* (L.) in Hertfordshire and Middlesex

A single specimen of *Callimorpha dominula* was taken at mv light in a garden in Letchworth, Hertfordshire (VC 20), at approximately 23.30 hours on 22 June 2010. The captor, Randy Drew, immediately recognised the significance of the discovery and noted that the weather conditions were very warm, in spite of the clear sky and with hardly any breeze.

About a week later Geoff Geiger was equally surprised and delighted to find another example of this species in his garden at Wembley, Middlesex (VC 21) in the morning of 3 July; it was near to, though not inside, one of the moth traps and so is entered into the database as being attracted on 2 July.

There are no previous records for Middlesex; the open-circle in grid square TQ 28 shown in the distribution map for this species in Heath & Emmet (1979. *Moths and Butterflies of Great Britain and Ireland* volume 9, page 109) seems to be in error. In Hertfordshire, there are five previous records, from Hitchin in the north and the Tring/Berkhamsted area in the south-west, between 1872 and 1953; these are summarised and discussed in Plant (2008. *The Moths of Hertfordshire*. HNHS). The moth is well-established in the south-west, in Carmarethenshire and Pembrokeshire and from Cornwall to Hampshire and is found locally east of here in Berkshire, Oxfordshire and Gloucestershire and also in south-east Kent where it maintains a precarious existence (Skinner, 2009. Colour *Identification Guide to the Moths of the British Isles*. 3rd revised and updated edition. Apollo Books). There are late nineteenth century records from north-west Kent at Darenth, Woolwich, Erith, Dartford and Blackheath (Plant, 1993. *Larger Moths of the London Area*. LNHS) and this area also generates one of the oldest records of this species, with Moses Harris noting in the *Aurelian* in 1766 that '*The best place to obtain this caterpillar is at Chalton, in Kent, down in the chalk dell, near the halfway house to Woolwich, and on beating the nettles which grow on the sides of banks will roll down in plenty*'. However, the moth is apparently not in north-west Kent now and evidently has retreated south-eastwards at some stage. In 2007 and 2008 established colonies were found in East Sussex (Skinner, *op. cit.*). The sudden and apparently unaided arrival of two separate examples a week apart from each other in the south-east of England is most interesting and one wonders if there may be other, currently unreported, sightings?— Colin W. Plant, 14 West Road, Bishops Stortford, Hertfordshire CM23 3QO (E-mail: cpauk1@ntlworld.com).

Notes on *Cionus scrophulariae* (L.) (Col.: Curculionidae)

Read (1977. Notes on the biology of *Cionus* scrophulariae. *Ent. Gaz.* **28**: 183 – 202) provides much useful information on cocooning by this weevil species and his Note is important for its record of egg-laying observations, but he incorrectly cites both Kew (1902. Notes on the weevil cocoons of the figworts. *Naturalist* **544**: 149 – 155) and Cox (1951. The pupation of *Cionus scrophulariae*. *Ent. Mon. Mag*. **87**: 107) as saying that *Cionus* 'spins its cocoon with a fine thread from its anal segment'. Both these cited works are adamant that it does not and their assertion is supported by my own observations during 2010, from a site near Kew Bridge in London and from keeping *Cionus* in a vivarium on my patio.

Perhaps the 1902 work by Kew should be reprinted. He noticed several things that I did not, but then I also noticed some that he did not report. For example, after the milky globule is taken from the rear, the larva does a lot of 'chewing', presumably also 'spitting' a chemical of some kind to make the globule stiffer – or more elastic. After the larva curls into a ring, the cocoon membrane that has developed on its body has a hole in its middle, in the region of the protolegs, and the larva fills this by pushing the 'chewed' globules in with its head. This seems a clumsy process; several times I saw it fail and start the whole cocooning process over again.

C. scrophulariae is said to put its cocoons on the florets of the Figwort plant, where they are camouflaged against the seed pods, but my observations at the Kew Bridge site in spring 2010 is that they were put under the leaves, before the florets had grown and long before the seed pods had appeared. Perhaps this was because of the 'plague' of *Cionus* and the second heat wave in May? It is interesting to note that the Kew figwort plants are regularly soaked by 'boat wash' and at spring high tides are fully inundated by the waters of the Thames. It is unclear how *Cionus* copes with this.

Read (*op. cit.*) says that the details of overwintering are not known for *C. scrophulariae*. My own *in vitro* adults were on the netting at the top when indoors, but when put outside on the cold patio they went down into the leaf litter. Given the tidal inundations and boat wash, there is no such litter layer at the Kew Bridge site, where the host plants grow from the stone river bank. On 14.x.2010 I took away an entire plant, but a careful search of it yielded no adult beetles. Presumably the insects must move to more suitable hibernacula? There is litter a distance of some three metres away.

A large number of mating adults appeared at the Kew Bridge site on 21.v.2010, with around 200 counted. I counted 100 of the next generation in August until they vanished on 20.viii.2010. On this latter date, all but one or two of my *in vitro* colony also left their figwort plants and moved to the top netting where they became dormant. So, it seems that they may be dormant for about nine months of the year.

Many of my *Cionus* cocoons reared Hymenopteran parasitoids of the family Eulophidae. These were very kindly identified by Dr Richard Askew as *Entedon zanara* Walker (152 specimens) and *Entedon cionobius* (Thomson) (20 specimens).— CLIVE R. CURTIS, 3 Cressage House, Walnut Tree Road, Brentford, Middlesex TW8 0LA.

Nephopterix angustella (Hb.) (Lepidoptera: Pyralidae) new to Ireland

On the night of 3 September 2010, an example of the pyralid moth *Nephopterix angustella* was taken at light at Tramore, Co. Waterford (Vice-county H6; Irish grid reference S 578014), on the south-east coast of Ireland. The specimen was identified with reference to Goater (1986. *British Pyralid Moths*: *A Guide to their Identification*. Harley Books).

A member of the subfamily Phycitinae, more commonly known as knot-horns, *N. angustella* is widespread but uncommon in southern England, where it is bivoltine, flying in June and July and again in September and October. It can be found where Spindle *Euonymus europaeus*, its larval foodplant, occurs with the larvae feeding internally in the berries (Goater 1986 *op. cit.*).

The identity of the specimen has been kindly confirmed by K.G.M. Bond, University College, Cork and is lodged with the National Museum of Ireland, Natural History, Dublin.— TONY BRYANT, Priest's Rd. Tramore, Co. Waterford, Ireland.

A. A. ALLEN

We were saddened to learn recently that A. A. Allen passed away during June 2010, just a few days short of his 97th birthday. Allen was one of Britain's most senior coleopterists and for the fifty years from 1951 to 2001 was the beetle expert on this journal's Editorial panel. We very much hope to publish an obituary in the near future and the Editor would welcome potential contributions towards this.

A NEW GENUS AND SPECIES OF TELENOMINAE (HYM., PLATYGASTROIDEA: SCELIONIDAE) FROM ITALY

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Abstract

A new genus *Ioseppinella* and new species *Ioseppinella serena* (Hymenoptera, Platygastroidea: Scelionidae) are described from Italy based on a male specimen discovered in Sicily.

Key words: Hymenoptera, Scelonidae, Italy, Sicily, new genus, new species

Ioseppinella gen. nov.

Diagnosis

Male. At first sight because of its general habitus, the new genus could be mistaken for *Trissolcus* Ashmead, 1893. However, in *Trissolcus*, the posterior ocelli are usually less than their longitudinal diameters distant from the inner orbits of the compound eyes (Fig. 1, 2). By contrast, in *Ioseppinella*, they are more than two diameters distant (Fig. 3, 4). In addition, the surface below the malar sulcus for nearly all its length is strongly bulging. The scrobe is narrow, smooth and moderately deep. It extends as far as the anterior ocellus. From the front, the head gives the appearance of being divided into two hemispheres due to the exophthalmic condition of the compound eyes. The mandible is unidentate with a rather short, strong and bent tooth which is partly pointed at the apex. In *Trissolcus*, the propodeal halves are always separated and with their inner apices distant from one another. The interspaces are hidden by the median part of the dorsellum. In *Ioseppinella* gen. n., the propodeal halves are vertical and merge at their inner apices. As a result, the propodeal disc, which is also transversed by ridges, appears as a flattened strip against the metanotum. It has punctate sculpture similar to that occurring out from the scrobe above the insertions of the antennae.

Etymology

The new genus is named after the senior author's mother.

Ioseppinella serena sp. nov.

All measurements were made at 40 x 20 using a Wild M20 Stereo-microscope.

Diagnosis

Male. Nearly black. Radicle, scape and pedicel egg-yellow; A3-A12 darker; mandibles, tegulae, coxae and last tarsomere of all three pairs of legs brownish;

the remainder of the legs and also the wing venation obscured egg-yellow; the plane of the wings is water coloured and clear with sparse setation. Forewing (Fig. 5).

Head = 28 width x 11 length x 14 height; eye height = 10 x 8 width; interorbital space = 16; malar space = 6; OOL (ocello-ocular line), POL (posterior ocellar line), LOL (lateral ocellar line), POAD (distance of anterior ocellus from vertex) ratio = 2.4, 12, 5, 3.5. Scape with its top not reaching the anterior ocellus and incrassate in the upper half (7 length x 2.5 width); its inner edge is sharply carinate for approximately half its length. The pedicel is a little longer than 1\6 of the scape's length while the radicle is 1\7 of the latter's length. A2 and A12 almost the same length; A3-A11 moniliform, while A12 is tapering; A3 narrowed, shorter than A2. The hyperoccipital carina is absent while the occipital one is complete but very fine, very remote from the vertex which appears as a rather flat surface weakly elevated between the posterior ocelli that are some diameters distant from the occiput. Outer orbit remote from the base of its own eye. Mesoscutum strongly convex on approximately the anterior 1\2, while the posterior half becomes so flat and declivous that its apical rim appears superimposed on the border of the scutellum; notaulices absent; disc of the scutellum excluding the sides subrectangular in shape and declivous; dorsellum strip like; both scutellum and dorsellum smooth and shiny; all the surface of the mesoscutum is covered by minute reticulation in which the walls of the polygons are rather raised; the fore femora and tibiae more incrassate than those of the second and third legs. Forewing, gaster length ratio as = 55 : 20; longest cilia on the forewing approximately 1\5 of the maximum width of the wing-plane (65 : 12) (Fig. 5) while the longest fringe of the hindwing is 1\3 of its maximum width at that point. Metasoma appearing flat, roundish and the tergites after T2 partially retracted (23 width x 20 length); T1 as 12 width x 3.5 length; T2 as 23 width x 12 length; width to length ratio of mesosoma as 23 width x 20 length. Vestiture of all the body consists of sparse, short setae; eyes blackish and hairless; apical rim of the scutellum separated from the upper margin of the dorsellum by extremely minute and weak pits. Median surface of T1 transversed by traces of incisions, while T2 and subsequent tergites unsculptured and smooth. Length: approximately 1mm.

Female, host and biology

Unknown. Since some telenomines are known to be parasitoids of the eggs of Lepidoptera and shieldbugs (Hemiptera) (Kononova & Kozlov, 2001), *I. serena* may have similar hosts. The authors would be interested therefore in seeing any possible specimens of *I. serena* reared from the eggs of these hosts.

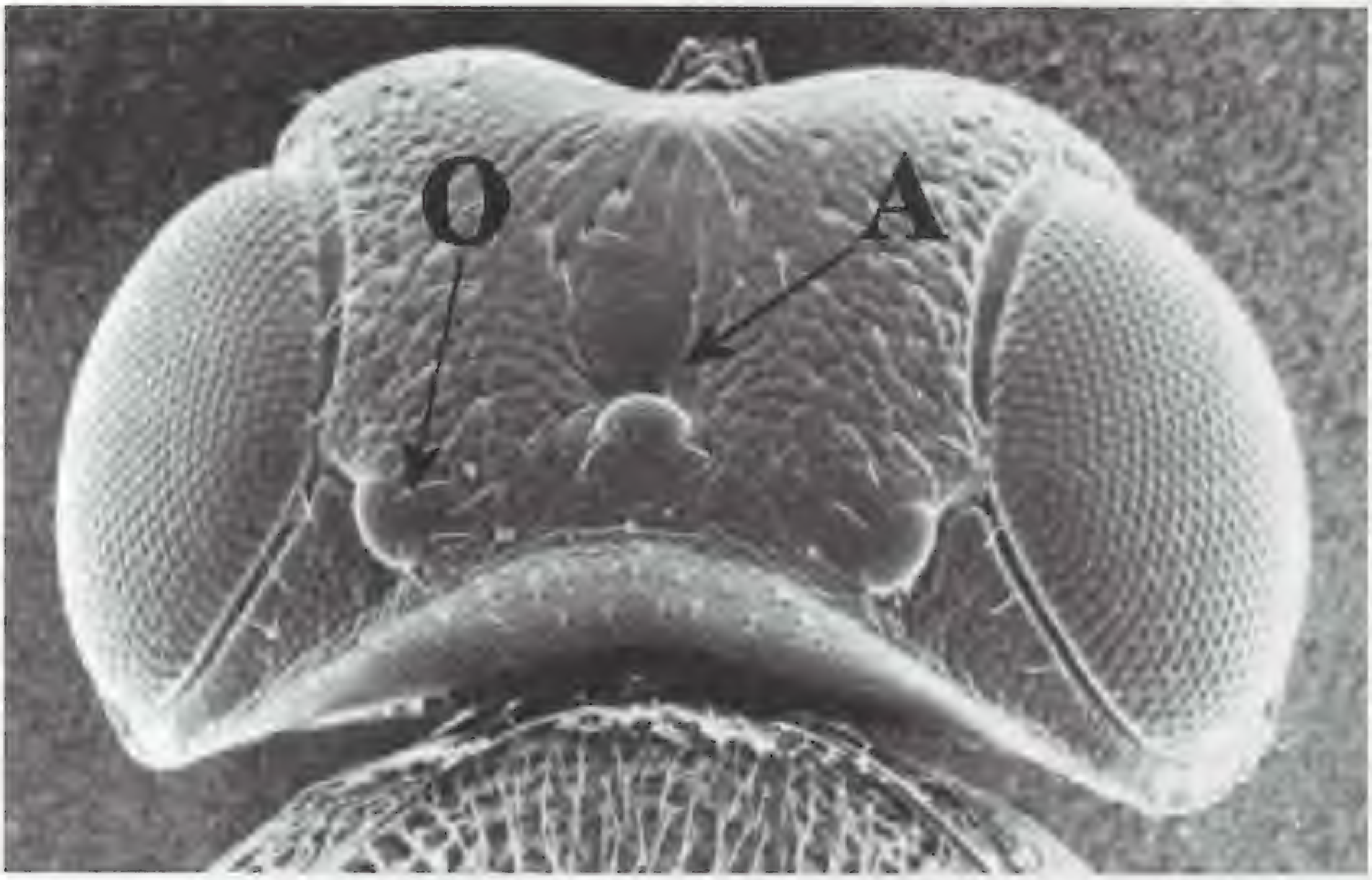

Figure 1. Dorsal view of the head of *Trissolcus* sp. (modified from Masner (1980)). O = lateral ocellus; A = anterior ocellar pit (in front of median ocellus). The pit is not present in all species of *Trissolcus*.

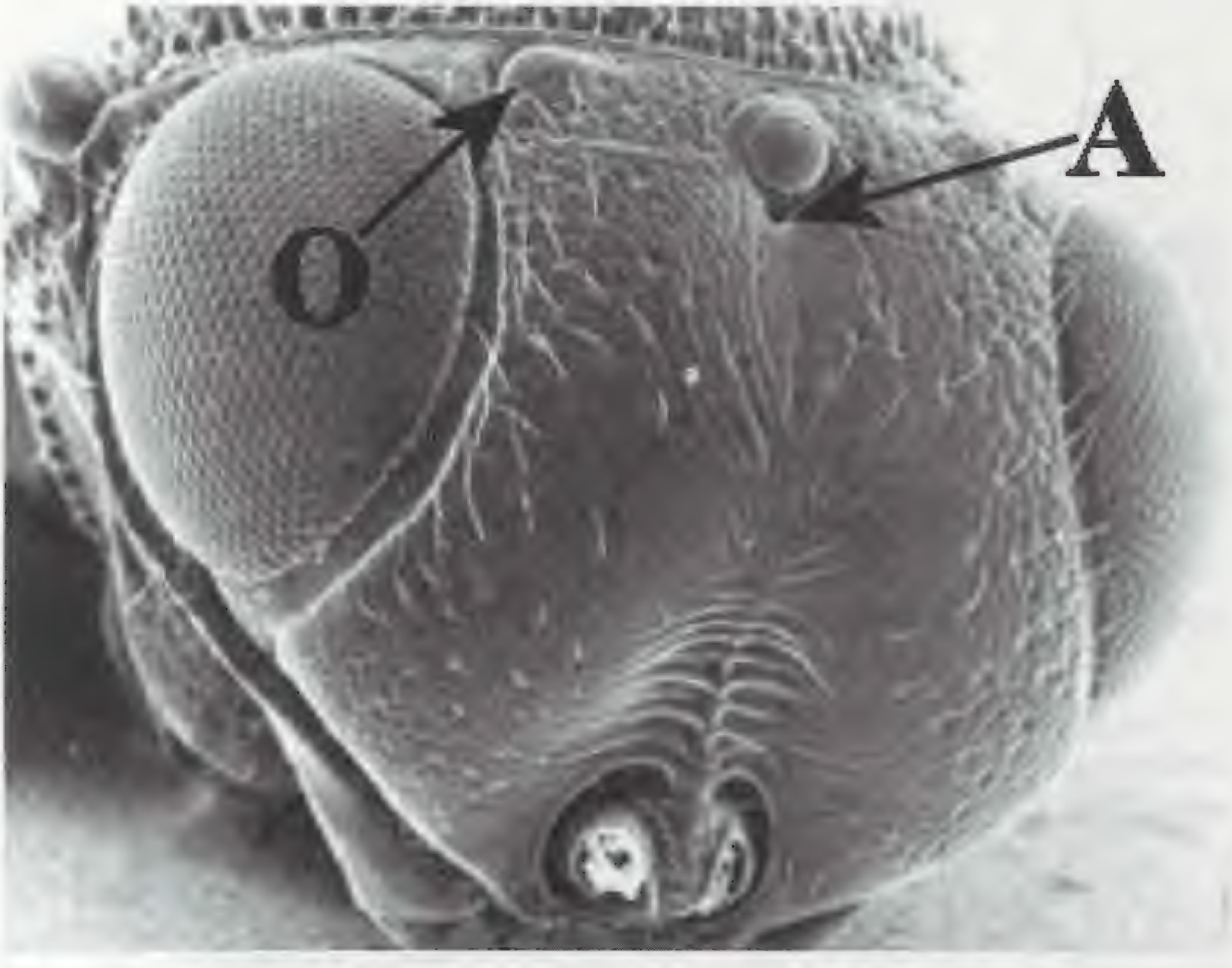

Figure 2. Frontal view of the head of *Trissolcus* sp. (modified from Masner (1980)). O = lateral ocellus; A = anterior ocellar pit (in front of median ocellus). The pit is not present in all species of *Trissolcus*.

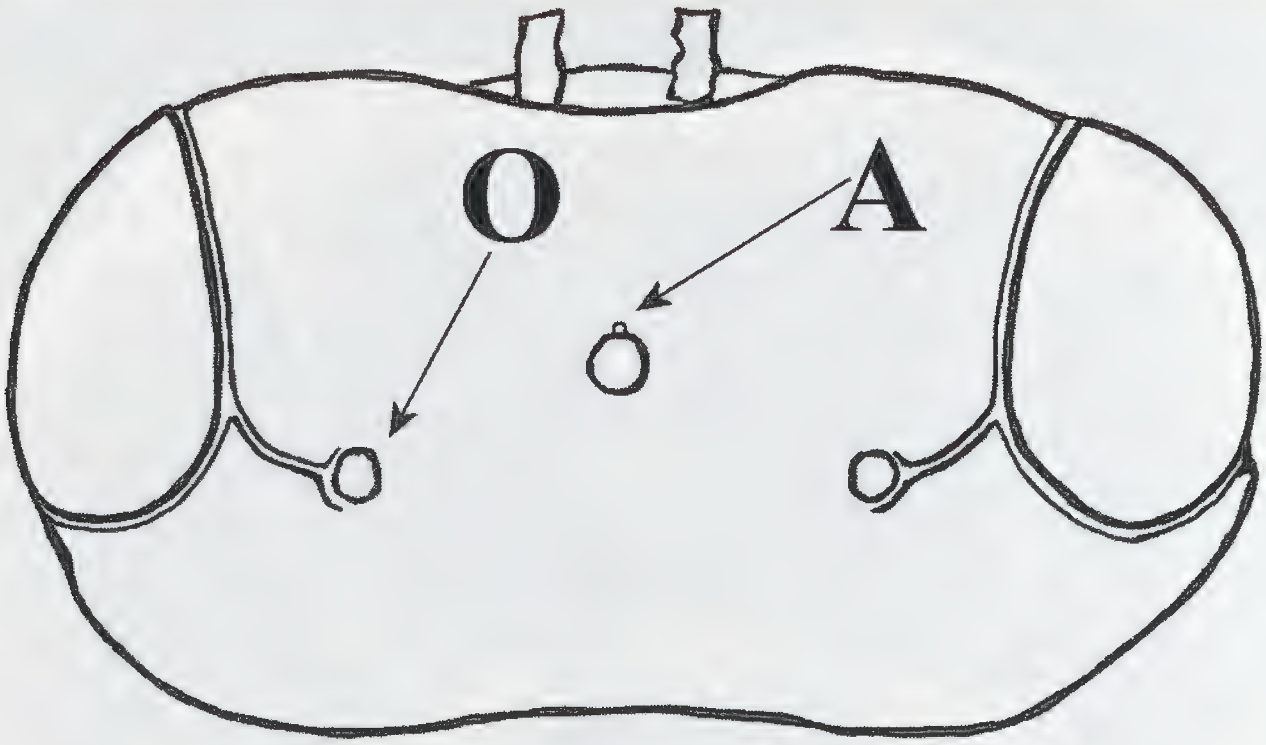

Figure 3. Dorsal view of the head of *Ioseppinella serena* sp. n. O = lateral ocellus; A = anterior ocellar pit (in front of median ocellus).

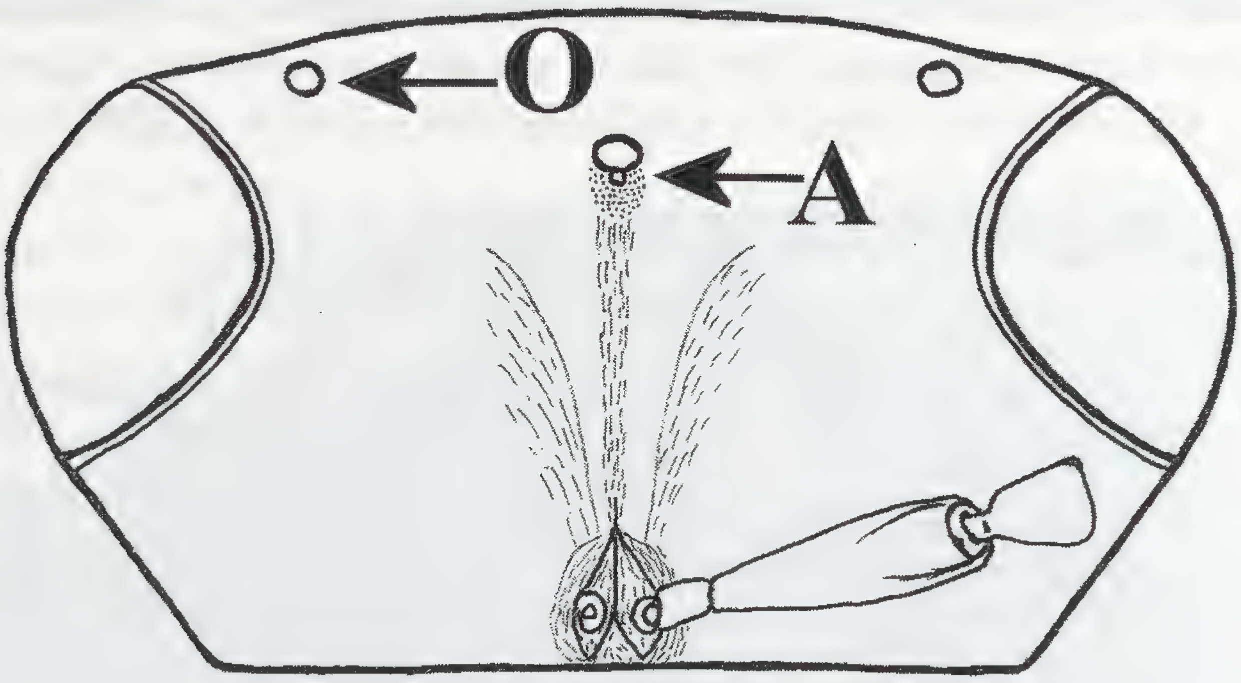

Figure 4. Frontal view of the head of *Ioseppinella serena* sp. n. O = lateral ocellus; A = anterior ocellar pit (in front of median ocellus).

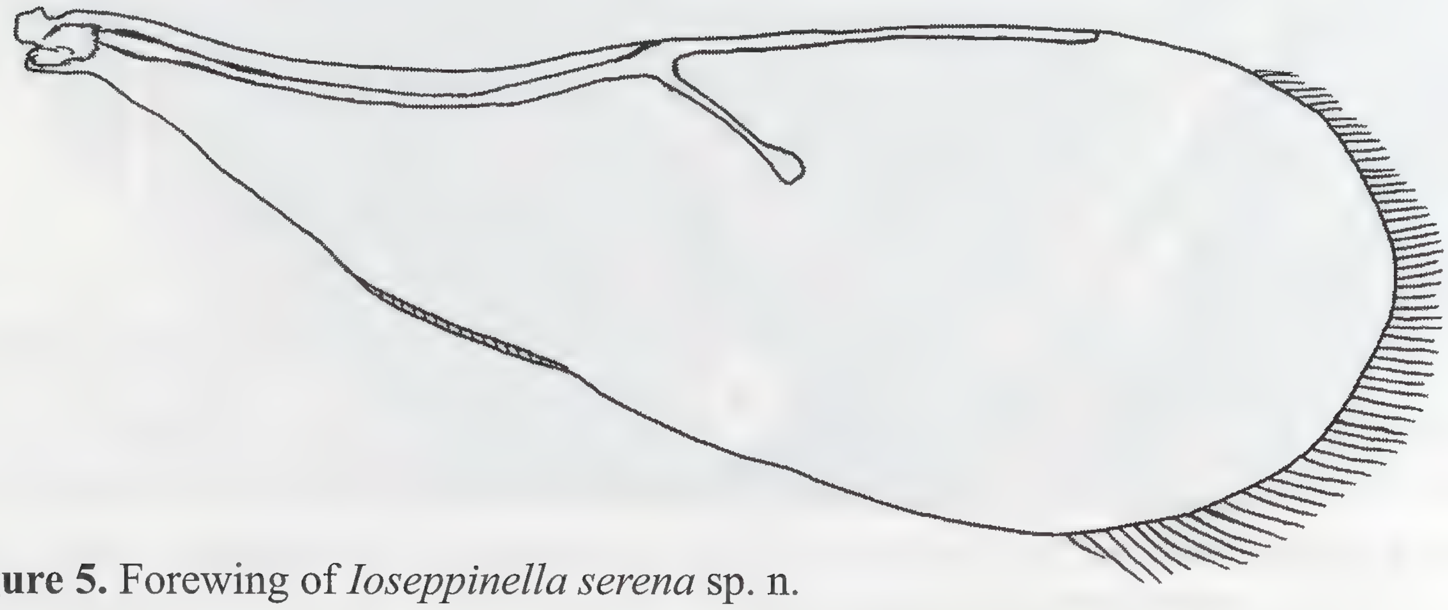

Figure 5. Forewing of *Ioseppinella serena* sp. n.

Material examined

♂ (Holotype). (ITALY, Sicily, Santa Flavia, contrada "Cefala", yellow trap in a citrus lemon orchard belonging to Mr A. Mineo, 21.x.1980) (*G. Mineo*) (Portici Università Federico II-Napoli). Head dissected and tagmounted along with other parts of the body.

Etymology

From the Latin *serena* meaning quiet.

Acknowledgement

The authors are indebted to Mr A. Mineo, technician of Dipartimento S.E.N.F.I.M.I.Z.O., University of Palermo, Italy, for his assistance.

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Masner, L., 1980. Key to genera of Scelionidae of the Holarctic region, with descriptions of new genera and species (Hymenoptera: Proctotrupoidea). *Memoirs of the Entomological Society of Canada* **113**: 1-54.

A further occurrence of the antlion *Euroleon nostras* (Geoffr. in Fourcroy) (Neur.: Myrmeleontidae) in Norfolk

I was interested to read of the discovery of the antlion *Euroleon nostras* in Essex (Bowdrey & Atkins, *Antea* 143). On 19 July 2010, an antlion was observed by IM on a wall close to his actinic moth trap, about 500 metres inland from the coastal sand dunes at the northern end of Great Yarmouth, East Norfolk. Several photographs were taken of the insect and later brought to DH who identified the insect as *Euroleon nostras*. The photographs were passed to Colin Plant who confirmed the identification, noting that it was a female.

This striking insect is a well-known resident in the Minsmere area of East Suffolk and also occurs sparingly at a few other stations on the Suffolk coast and inland on the Suffolk Sandlings. More recently it was discovered at Wells-next-the-Sea on the north coast of Norfolk (Northfield, 2006. *Ent. Rec.* **118**: 229-230).

Our thanks to Colin Plant for confirming the identification.— IAN MILLS, 80 Hamilton Road, Great Yarmouth, Norfolk NR30 4LZ & DAVE HIPPERSON, Summerfield House, Main Road, Filby, Great Yarmouth, Norfolk NR29 3HN.

***Lindenia tetraphylla* (Vander Linden, 1825) (Odonata: Gomphidae) a new genus and species for the Bulgarian fauna**

According to Beshovski (1994. *Fauna Bulgarica* **23***: Odonata. Academiae Scientiarum, Bulgaricae, Sofia*), *Lindenia tetraphylla* is not part of the Bulgarian fauna. According to Kalkman (2006. in Dijktra, K.-D. & Lewington, R. *Field Guide to the Dragonflies of Britain and Europe.* British Wildlife Publishing), the distribution of this species covers Central Asia, Middle East and the Mediterranean region (Greece, Montenegro, Slovenia, Croatia, Albania, Italy and Spain). In the last decade, the species was rediscovered from Tunisia (Kunz & Kunz, 2001. *Lindenia tetraphylla* rediscovered in North Africa. *Libellula* **20**(1/2): 79-85).

During the afternoon of 16 June 2009, in the Petrich district of south-west Bulgaria, not far away from Novo Konomladi Village, along the path way on Marena Hill at N 41°26'48"; E 23°18'44", 114 metres a.s.l., (**Plate 34**). a single female specimen was collected which without any doubt belonged to *Lindenia tetraphylla.* The specimen (**Plate 35**) is now at the National Museum of Natural History, Sofia.

The dragonfly could not really be described as shy, as it allowed itself to be collected with bare hands. During the next few days, many other individuals of the same species were observed flying around the same long pathway, with approximately 8-10 individuals on 17 June 2009 and the last observation on the afternoon of 20 June.

SB, in the company of a party of English dragonfly enthusiasts, observed 4-5 individuals over a four hour period, one landed very close and allowed field-notes to be taken, but evaded capture. It was very windy and the species flew very low, about 20 cm above the pathway. Nearby there is a pond where these *L. tetraphylla* may have been reared, but equally they could have been vagrants from Greece. The opinion that *Lindenia tetraphylla* can be a migrant in Bulgaria is supported of the fact that all individuals were observed away from the pool, on the grassy slopes of the hill showing typical feeding behaviour. Near the pool and its banks many other Odonata species were observed, but not a single *Lindenia* specimen. After 20 June, the locality was visited many other times by the authors, but no further sightings of *Lindenia* were made. On the collected specimen, a group of eggs is evident on the ventral tip of the abdomin (**Plate 36**). Perhaps, the eggs appeared on the abdomen during the four days of captivity? Without any doubt, if the specimen were free, it would have laid its eggs in the water somewhere. On this matter opinion must remain open, because when it was found it was not near water and not showing ovipositing behaviour.

This is not the first time that the author has seen this species. A few years ago, another *Lindenia* was spotted very close to Novo Konomladi Village, flying along the ditch, but unfortunately it evaded closer examination. It is interesting to mention that on the opposite side of Marena Hill is the only known locality of

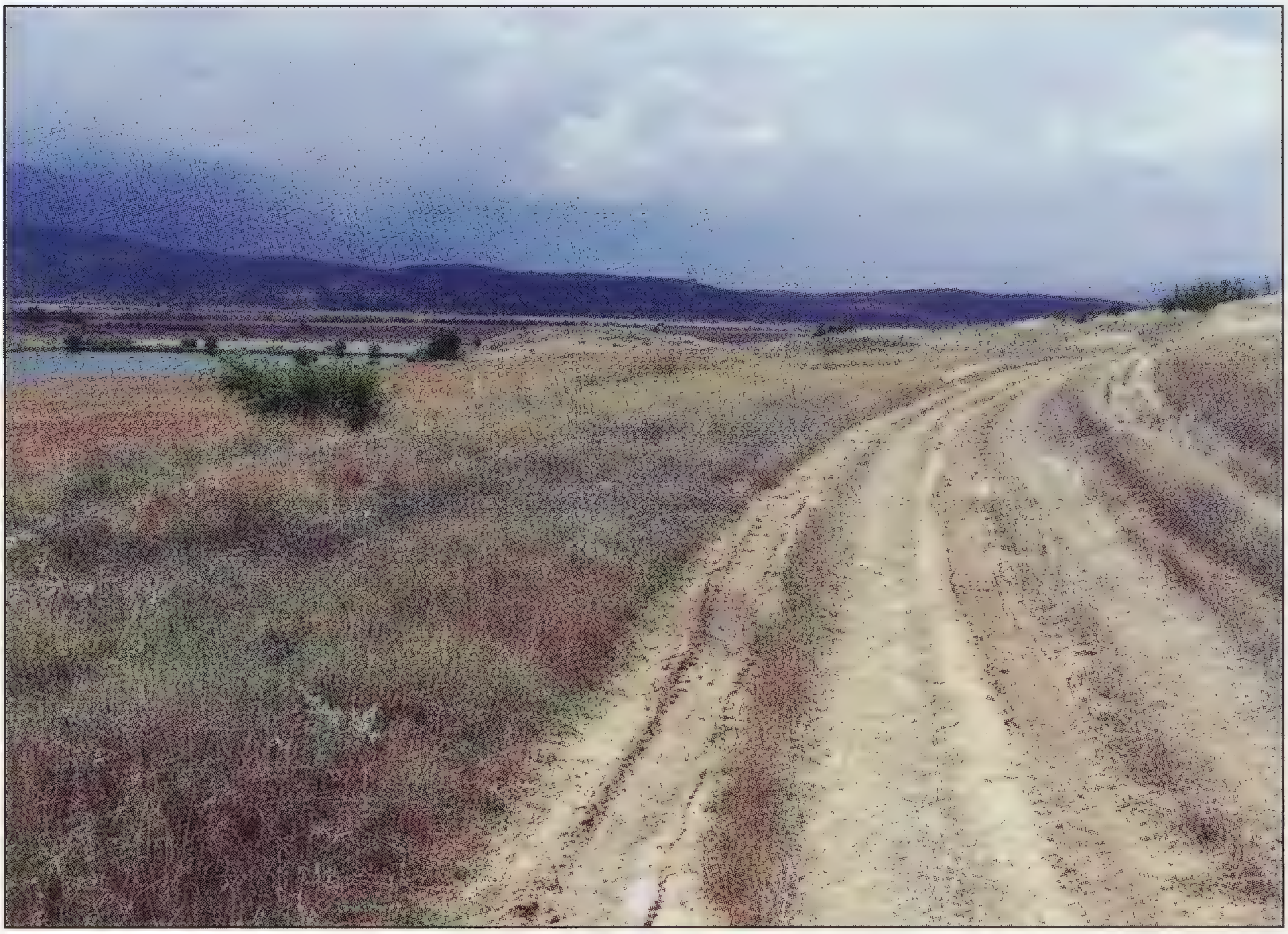

Plate 37. Collecting locality of *Lindenia tetraphylla*: Marena Hill, near Novo Konomladi, Petrich district, south-west Bulgaria. (Photo © S. Beshkov)

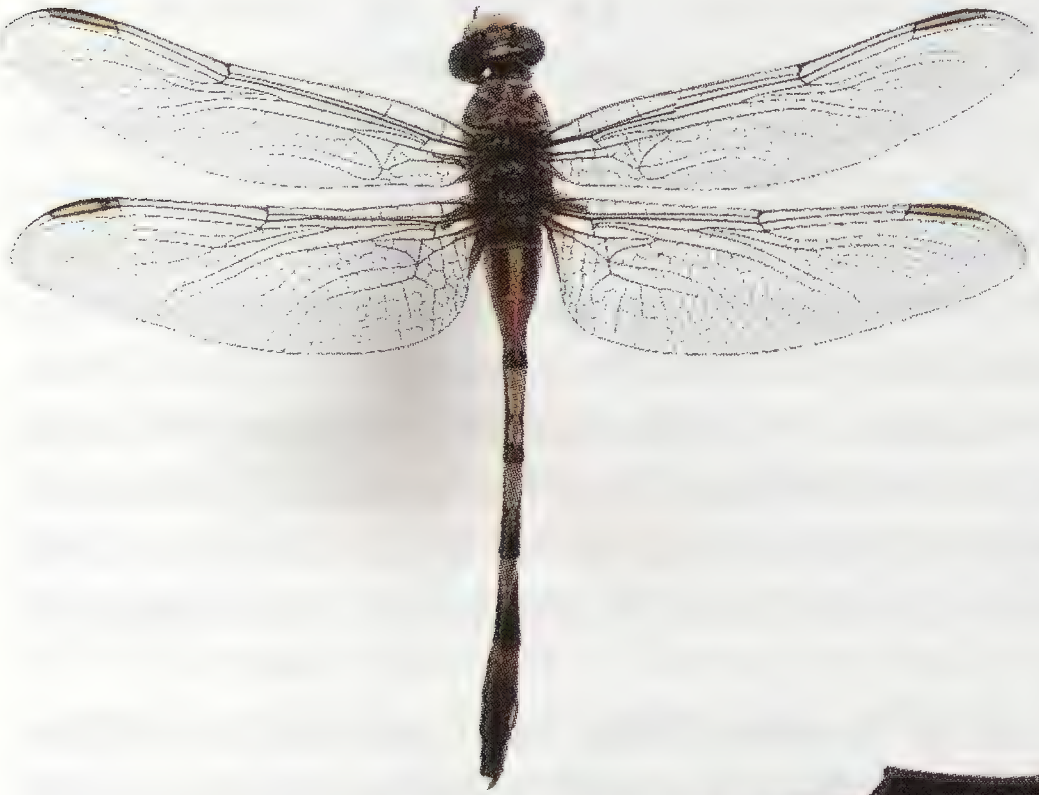

Plate 35. *Lindenia tetraphylla*, female, Marena Hill, near Novo Konomladi, Bulgaria, 16.vi.2009. (Photo © A. Ignatov)

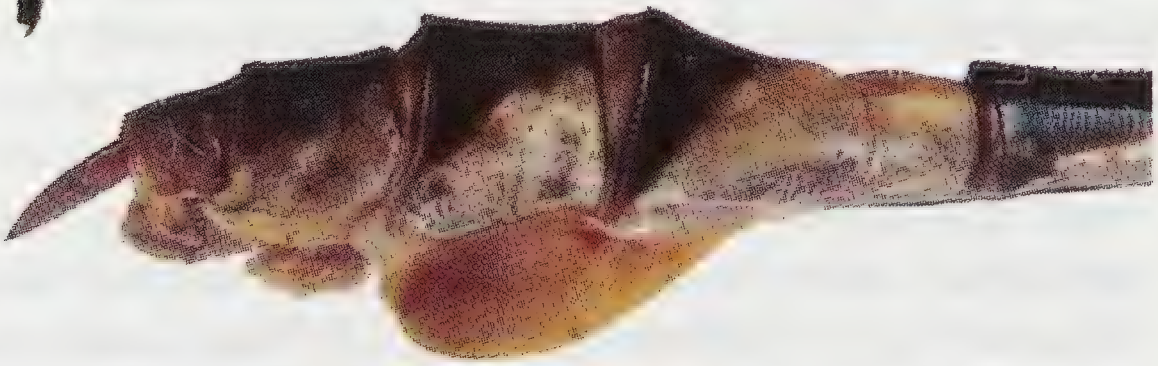

Plate 36. *Lindenia tetraphylla*, female, The Bulgarian specimen, abdominal tip showing the egg mass. (Photo © A. Ignatov)

another extremely rare dragonfly – *Selisiothemis nigra* (Vander Linden, 1825) (see Beschovski, V. & Gashtarov, V., 1997. *Selisiothemis nigra* (Vander Linden, 1825) a new genus and species for the Bulgarian fauna (Odonata: Anisoptera: Libellulidae). *Entomol. Z.* **107**: 309-310). At the same time in 2010, the authors and several other English dragonfly watchers visited the same locality, but no *Lindenia* were observed.

This species record the total number of known Odonata in Bulgarian to 67 species of 40 genera.— VICTOR GASHTAROV, P.O. Box 1733, 1000 Sofia , Bulgaria (E-mail: vgashtarov@yahoo.com) and STOYAN BESHKOV, National Museum of Natural History, Tzar Osvoboditel Blvd 1, 1000 Sofia, Bulgaria (E-mail: beshkov@nmnhs.com).

On the distribution of *Propomacrus bimucronatus* (Pallas, 1781) (Col.: Euchiridae) in Bulgaria

The beetle *Propomacrus bimucronatus* (Pallas, 1781) has relatively small area of distribution limited to the Mediterranean region of Europe and Middle East of Asia (Young, 1989. Euchirinae (Coleoptera: Scarabaeidae) of the world: distribution and taxonomy. Coleopts. Bull. **43**: 205-236; Bezdek 2006. Eucherinae, pp. 181. In: Löbl I., A. Smetana (eds.). Catalogue of Palaearctic Coleoptera, Vol. 3. Strenstrup, Apollo Books, 690 pp.). For Bulgaria the species was mentioned for the first time by Mašek (1985. První nález *Propomacerus bimucronatus* Pallas, 1781 v Bulharsku (Coleoptera Scarabaeidae – Eucharinae). Zpràvy Čs. Společ Entomol. ČSAV **21**: 61-63 (in czech), then by Král & Malý (1993. New records of Scarabaeoidea (Coleoptera) from Bulgaria. Acta Soc. Zool. Bohemoslovacae **57**: 17-29), Kalushkov & Dimova (1995. Applying of colour traps for faunistical and ecological researches of fam. Scarabaeidae (Coleoptera). Third Nat. Conf of Entomology 18-20 Sept., Sofia 260-263) and Gueorgiev (2001. Beetles (Insecta: Coleoptera) in Kresna Gorge. P. Beron (ed.): Biodiversity of Kresna Gorge 163-188).

The species was known from the Southern Black Sea Coast and the southern part of the Struma River Valley, in localities with a distinct Mediterranean influence (Primorsko (Mašek, 1985: 61), Sozopol, Arkutino, Lebnitsa (Král & Malý, 1993: 26); Kresna gorge: Yavorov railway station (Kalushkov & Dimova, 1995; Gueorgiev, 2001). We found a new locality in the Eastern Rhodopes Mountains, which connect the easternmost and the westernmost localities in Bulgaria (Fig. 1). The specimen (Plate 37) was collected at artificial light (160 watt MBFT bulb + 8 watt blacklight tube) in the first hour after starting of the

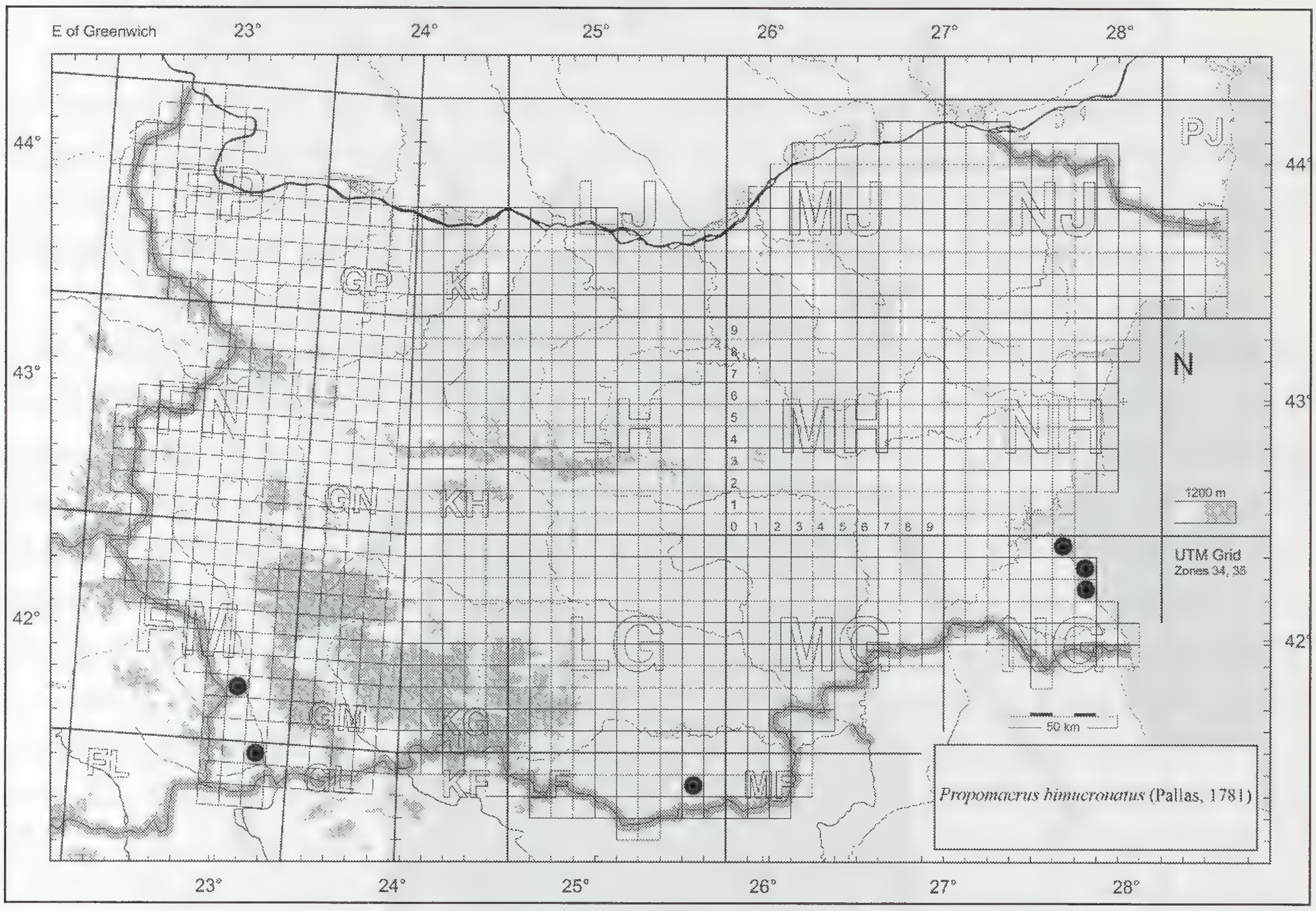

Figure 1. Distribution of *Propomacrus bimucronatus* in Bulgaria.

lamp. The exact label data are: the hill of Ada tepe near Krumovgrad, N 41°26'32.6" E 25°39'16.3", 400 m, 03.viii.2010, leg. B. Zlatkov & Ts. Ganeva. The native xerothermic oak forest of the hill has been completely destroyed and replaced with pine forest about 60 years ago. Now the native vegetation is recovering and among the pine-trees many other deciduous trees and bushes are growing, mainly oaks. The locality of the beetle is endangered by a mining company prospecting the region of the Eastern Rhodopes for gold. The company found high content of gold in the rocks and is planning to dig the hill. Because of the extensive overbuilding of the Black Sea Coast, we consider that the other localities of *P. bimucronatus* in Bulgaria are also critically endangered. Generally, the species is very rare and is considered as endangered of extinction. It is included in the EC Habitats Directive and IUCN Red list (Nieto & Alexander, 2010. *European Red List of Saproxylic Beetles*. Publications Office of the European Union, Luxembourg, 45 pp. Available online at http://ec.europa.eu/environment/nature/conservation/species/redlist). The presence of *P. bimucronatus* indicates well-preserved natural habitats and is sufficient reason to enforce all activities for its protection.– ROSTISLAV BEKCHIEV, National Museum of Natural History, 1 Tsar Osvoboditel Blvd, 1000 Sofia, Bulgaria (E-mail: rbekchiev@gmail.com) and BOYAN ZLATKOV, Sofia University, Departement of Zoology and Anthropology, Faculty of Biology, 8 Dragan Tsankov Bvld., 1164, Sofia, Bulgaria (E-mail: bzlatkov@gmail.com).

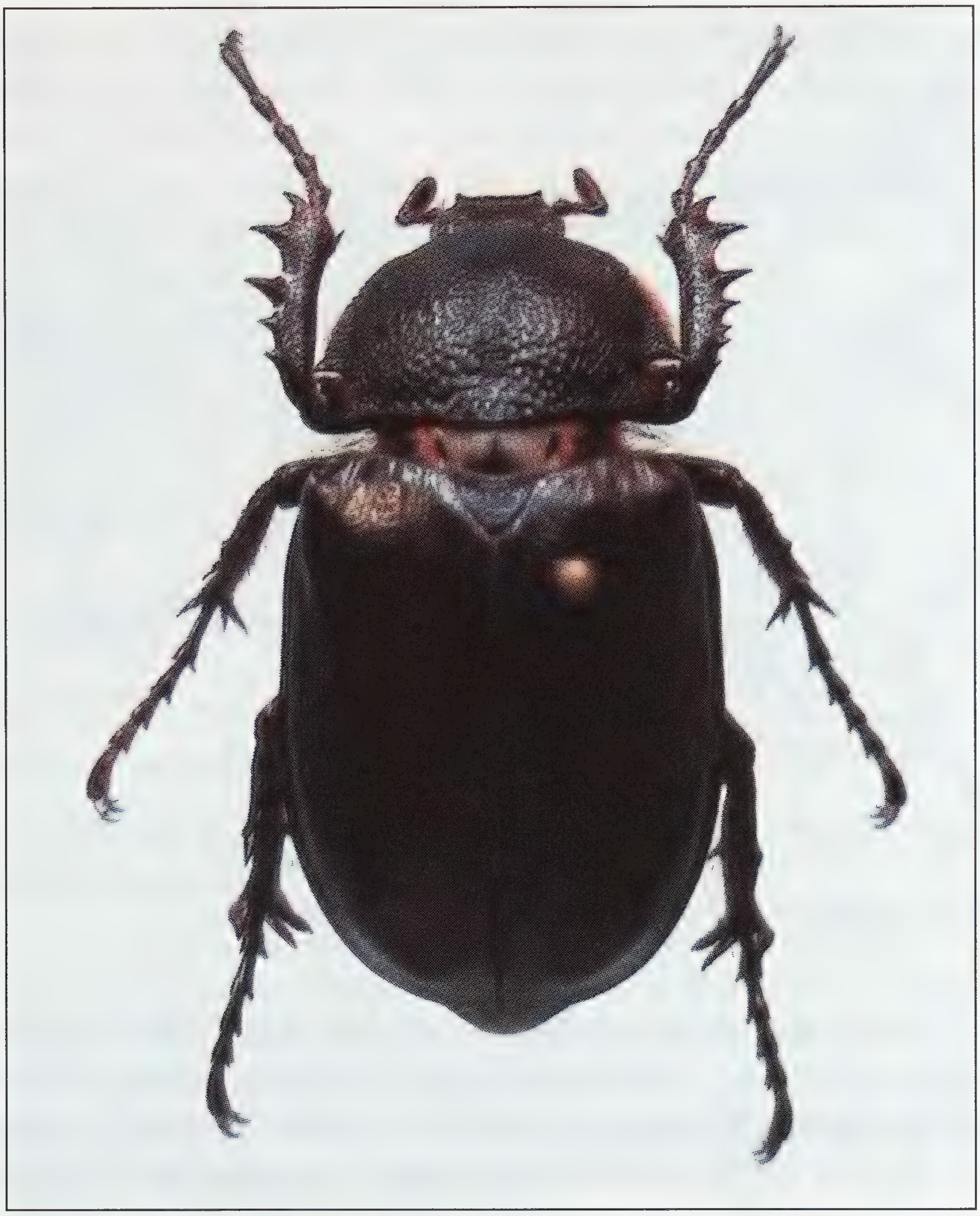

Plate 37. *Propomacrus bimucronatus* (Pallas, 1781) ♀, Eastern Rhodopes, Bulgaria.

Second record of the Clay Fan-foot *Paracolax tristalis* Fabr. (Lep.: Noctuidae) for Dorset, VC 9

Recent examination of stored samples from the Rothamsted Insect Survey light-trap near Corfe Castle (site 595, O.S. grid reference SY 984814) found that on the night of 30 June/1 July 2009 a single specimen of *Paracolax tristalis* was caught. This is only the second record for the county. It took over 60 years for this second appearance, with the first example of the species being recorded at light by A. Russell at Scar Bank, Swanage on 28 July 1948 (unpublished record at *http://www.dorsetmothgroup.org.uk*). The first record occurred during a notable period of immigration and it is likely that the 2009 specimen was also a migrant, as it turned up during a period where many migrant species were recorded locally.

In Britain this Nationally Scarce species is confined to south-east England where it occurs very locally in a small number of woodlands in Kent, Sussex and Surrey. It prefers sunny, sheltered areas amongst re-growth, where the larvae feed upon the fallen leaves of Oak *Quercus* sp.

Many thanks to David Gould for his continuing hard work and dedication operating the light trap.— Philip J. L. Gould, Co-ordinator of the Rothamsted Insect Survey Light-trap Network, Plant & Invertebrate Ecology Department, Rothamsted Research, Harpenden, Hertfordshire AL5 2JQ (E-mail: phil.gould@bbsrc.ac.uk).

The Small Ranunculus *Hecatera dysodea* (D. & S.) (Lep.: Noctuidae) in Rothamsted Insect Survey Light Traps

Hecatera dysodea was once a widespread and locally frequent species in the southern half of Britain, with strongholds in East Anglia and the south-east. Occasional records also arose from the south coast, around the Severn and into south Wales (Waring, P., Townsend, M. & Lewington, R. 2003. *Field Guide to the Moths of Great Britain & Ireland.* British Wildlife Publishing). However, during the last quarter of the nineteenth century, the moth disappeared from most of the localities where it had once been common. It retained a foothold in the south-east until the early 1900s but by 1912 it had become very rare even here. After the First World War none were seen anywhere until the 1930s, when it was found in Hertfordshire, Somerset and Sussex (Plant, 2008. *The Moths of Hertfordshire.* Hertfordshire Natural History Society), but the last record was in 1939. The species was then regarded as extinct in Britain until it reappeared on 26 June 1997 in Gravesend, north-west Kent. Since then it has spread to again become well established in the south-east, with records extending as far as north Cambridgeshire and Northamptonshire. It is also now common at Newport (Monmouthshire), having first being found in the area in 2001; and several records have also come from Merseyside in 2005 and 2006 (Waring *et al*, *loc. cit.*).

Despite operating over 650 light traps since the early 1930s, many of which have been within the range of *H. dysodea*, the Rothamsted Insect Survey has only recorded three British specimens (although several have been caught in France). The first of these came from the Harpenden IV trap, VC30 (site 594: TL 153133) and was caught on the night of 21/22 July 2008. Since it first reappeared in Hertfordshire at Cheshunt in 2003, the species has spread quickly throughout the south of the county and is steadily heading northwards. It is likely to be making use of many railway embankments and wasteland areas where the foodplants (Prickly Lettuce *Lactuca serriola* and Great Lettuce *Lactuca virosa*) are found (Plant, *loc. cit.*). The Rothamsted specimen is the first record for the TL11 10km square since the nineteenth century, when it was often found in the Sandridge area (Griffith, A.F. 1884. *Notes on Lepidoptera observed in the neighbourhood of Sandridge*. Transactions of the Hertfordshire Natural History Society and Field Club. **3**. 58-66. Cited in: Plant, *op. cit.*).

The other Rothamsted trap to have recorded *H. dysodea* is that at Eaton Bray in Bedfordshire, VC30 (site 559: SP 967207), where one was caught on 3/4 July 2009, and another on 29/30 June 2010. The species appears to be spreading here too. The first for the county was of a larva feeding on Prickly Lettuce, found by Colin Plant on 16 August 2005 at Upper Sundon Chalk Quarry. The following year both larvae and adults were found in a Dunstable garden and these were soon followed by an adult observed in another local garden. This second site also produced singletons in 2008 and 2010. Andy and Melissa Banthorpe recorded at least four adults in their garden in Lower Stondon in 2010 and the same year produced in excess of 15 more records for the county, including three at once in a Biggleswade garden.

Many thanks to Colin Plant, the Hertfordshire and Middlesex Moth Recorder, for information regarding Hertfordshire records to Andy and Melissa Banthorpe, the Bedfordshire recorders, for their county's details, and to colleagues at Rothamsted for their continued assistance operating the light traps.— PHILIP J. L. GOULD, Co-ordinator of the Rothamsted Insect Survey Light-trap Network, Plant & Invertebrate Ecology Department, Rothamsted Research, Harpenden, Hertfordshire, AL5 2JQ (E-mail: phil.gould@bbsrc.ac.uk).

Peyerimhoffina gracilis (Schneider (Neur.: Chrysopidae) – fourth British locality

Peyrimhoffina gracilis (= *Tjederina gracilis*), is a distinctive green lacewing that was first found in Britain at Silwood Park, near Ascot in Berkshire in September 1999 (Donato, Brooks, Pickett, & Hardie, 2001. *Ent. Rec.* **113**: 131-135) with subsequent captures up to at least the spring of 2001 reported in that same work indicating clearly that it was resident there. Since then, the species has been found at Farnborough, Hampshire, with a hibernating example on 12 January 2003 and an adult to a lighted window on 20 September 2003, and one, perhaps two, in a light trap in a garden at South Croydon, Surrey on 4 August 2003 (Marshall, & Collins, 2003. *Ent. Rec.* **115**: 285-286). The fact that the January example in Hampshire was hibernating is another indication of probable residency in Britain, although the South Croydon example shared the light trap with an unprecedented number of green lacewings that may possibly have included immigrants.

Rather surprisingly, perhaps, there have been no other British Isles records of this lacewing until that now reported. On 2 November 2010, whilst collecting with Marcel Ashby on private land at Chigwell Row in South Essex, we decided to beat a line of six-metre tall *Cupressus* (probably '*leylandii*') trees in the hope of finding the weevil *Pachyrhinus lethierryi*, which had only recently been added to the British checklist (Plant, Morris, & Heal, 2006. *Coleopterist* **14**(2): 59-65). Sadly we failed in that venture, but amongst the several psocids that fell into the beating tray was a green lacewing that was clearly smaller, darker green and with far more pointed wings than members of the *Chrysoperla carnea* aggregate – the only chrysopid that we expected at this date. It took a full ten seconds for the penny to drop that this was *P. gracilis* – about one second less than it took me to realise that I had committed one of the entomologist's 'Cardinal Sins' – I had beaten a tree without having a single empty specimen tube about my person. Fortunately, the *leylandii* trees were next to the parked cars and a tube was hurriedly grabbed and the insect secured for confirmation.

The November date of this specimen, at what is only the fourth British locality for *P. gracilis*, does not at all suggest immigration and indicates instead that this was resident about to enter hibernation, perhaps in the accumulated debris against the trunks of the trees. Marshall & Collins (*op. cit.*) suggest that this insect is typically associated with pine forests with Fir *Abies* spp., Spruce *Picea abies* and Scots Pine *Pinus sylvestris*, though they appear to have omitted reference to their source of that information. With this statement in mind, it is interesting that the Essex example was beaten from *Cupressus* sp.

Donato et al (*op. cit.*) present limited evidence to suggest that this lacewing is not an overlooked resident in the British Isles. I tend to agree, and am relatively convinced that it is a new arrival that is now widely resident across at least the southern part of Britain. Specific searching is likely to reveal more localities. An excellent revision of the relevant couplets within my AIDGAP key to lacewings (Plant, 1997. *Field Studies* **9**: 179-269) is provided by Donato et al (*op. cit.*). However, whilst careful checking is always desirable, there are reliable field characters that render this species immediately distinctive. It stands out at once, to the unaided eye, as being rather small and of a very dark green colour – much darker than any other British lacewing; the acutely pointed wings are also obvious. A closer look reveals several other field characters available to the naked eye. The antennal scape (the large basal segment) is brown and stands distinct from the deep green of the head capsule. The antennal flagellum is much darkened; there is a distinct hint of 'milkiness' about the wing membrane in the basal area next to the thorax; the pterostigma of the forewing is elongate and deep green in colour, there is a narrow, well-defined, pale mid-line dorsal stripe on all three segments of the thorax and, the clincher, a pale (yellow) lateral stripe along the full length of the abdomen. It should be added that this is all observed on a pre-hibernation insect; after the winter the colours may have faded, although *P. gracilis* is not known to turn carneous (pink) as do the species in the *C. carnea* complex. Use of a hand lens reveals two other features that will help confirm the diagnosis. First, the elongate space between the sub-costa and the radius on the forewing is in-filled greenish and contrasts with the relatively transparent membrane on the rest of the wing; secondly, the tarsal claws all lack any basal swelling – a feature that is actually rather easier to see on this species than it is on some others with smaller claws.— Colin W. Plant, 14 West Road, Bishops Stortford, Hertfordshire CM23 3QP (E-mail: cpauk1@ntlworld.com).

***Bucculatrix maritima* (Stt.) (Lep.: Buculatricidae) feeding in October at two English sites**

Descriptions of the phenology of *Bucculatrix maritima* in British publications reveal a lack of clarity. Taking a lead from *Moths and Butterflies of Great Britain and Ireland*, volume 2 (Harley Books), the basic formula of two generations a year with adult moths in June and August and larvae in April-May and July-August has been widely repeated. The gap between the adult stage in August and the larval stage in April of the following year has not been addressed, with the *MBGBI* description stating only that 'It is not known whether the winter is passed as an ova or as an early instar larva'. On the other hand, a study in the Netherlands suggests that the most likely winter state is as a third instar larva (Jansen & Hemmings, 1988. *J. Applied Entomology* 105 (1-5): 53-61). Chance finds in October 2010 suggest that in England, larval feeding commences and continues through the autumn.

Aster tripolium, the larval foodplant, grows along both sides of the tidal River Severn in Gloucestershire (VC 34), as far north as Minsterworth (O. S. grid reference SO 7716). However, many communities of the plant grow at the base of steep, unstable river cliffs and are out-of-bounds. Fortunately, an area of plants at the base of Hock Cliff (SO 7209) is accessible with caution and while scanning across the asters with binoculars on 8 October, I saw a few leaves with possible dipterous leaf mines, although there was no evidence in the aster foliage to suggest that *maritima* might have been present. Three such leaves were collected for further study. On 13 October, detailed examination of leaves with a 10x magnifying glass revealed very narrow thread like mines not visible to the naked eye. The main corridors originated from a tangle of similarly narrow mines, although the presence of pustules caused by an unidentified rust made it very difficult to determine the location of any eggs. An example of one of the mines was 0.20-0.25 mm wide with a central track of black frass 0.1 mm in width. It extended for approximately 2 cm largely, but not completely, towards the leaf tip. The larva in this mine was 1.6 mm in length and inside the leaf it appeared to be yellowish green in colour with an obvious green gut line. The head was pale brown.

Initial concerns that the larvae had been encouraged to hatch and start feeding as a result of being taken into a warm house were allayed on 14 October by the discovery of the same type of mines in a small area of salt marsh at New Barn Bay, Arnside, Cumbria (SD 4477; VC 69). The larvae from here continued to feed and to extend their mines until 23 October, when three of them were found wandering around the leaf container. They were approximately 2 mm in length and a golden yellow colour, with a mid-brown head and pro-thoracic plate. The gut line was darker than the overall body shade, the legs concolourous with the body and the feet slightly darker. Although provided with a new leaf, the larvae did not recommence feeding.

The observations outlined here suggest that *Bucculatrix maritima* does indeed pass the autumn as an early instar larva and that descriptions of the moth should be rephrased accordingly.— ROBERT HOMAN, The Apiary, Swindon Lane, Cheltenham, Gloucestershire GL50 4PD.

ADDENDA ET CORRIGENDA

We have been notified of the following corrections to volume 122, 2010.

Page 3: In Table 4 of the Note by Roger Hayward, the earliest date for Orange Footman *Eilema sororula* should read 30.iv.2009 and not 30.vi.2009.

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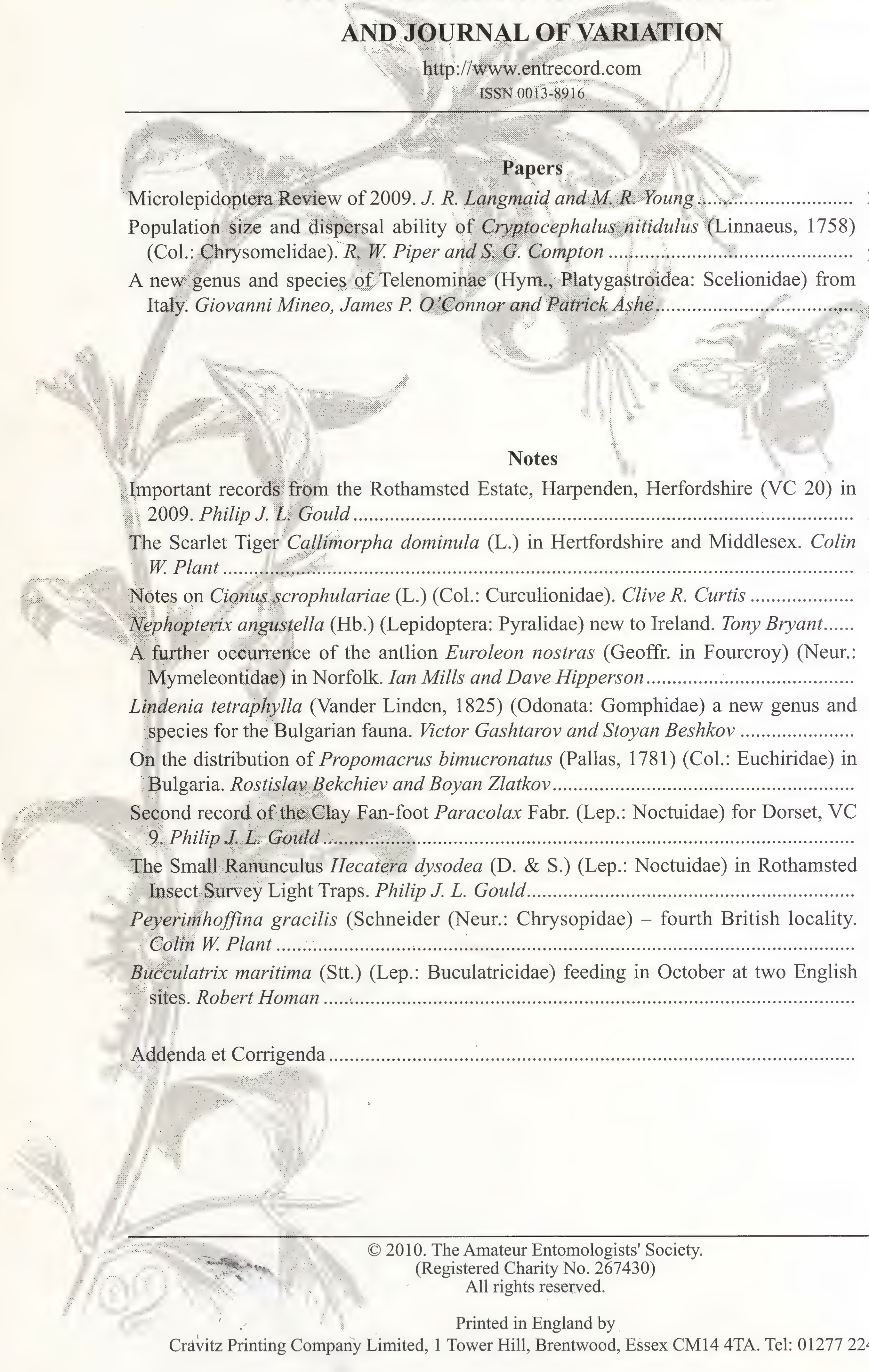

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